THIS WEEK'S National Petroleum NEWS

Coming Meetings

American Oil Burner Association, Ben Franklin Hotel, Philadelphia, Pa., April 13 to 18.

American Petroleum Institute, division of refining, semi-annual meeting, Hotel Statler, St. Louis, April 15, 16.

Tennessee Oil Men's Association, Peabody Hotel, Memphis, Tenn., April 22.

Kansas Oil Men's Association, Hotel Lassen, Wichita, Kan., April 23, 24.

National Petroleum Association, Hotel Cleveland, Cleveland, O., Apr. 23, 24.

American Petroleum Institute, Central Group on Automotive Transportation, Adolphus Hotel, Dallas, Tex., April 27, 28.

American Gas Association, Natural Gas Department, Memphis, Tenn., May 11 to 14.

American Oil Chemists Society, New Orleans, La., May 14, 15.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, May 19, 20, 21.

American Petroleum Institute, Division of Production, Baker Hotel, Dallas, Tex., June 3, 4.

American Society of Mechanical Engineers, National Oil & Gas Power meeting, Madison, Wis., June 15 to 18.

American Society for Testing Materials, Chicago, June 22 to 26.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, Houston, Tex., Oct. 2, 3.

American Petroleum Institute, annual meeting, Stevens Hotel, Chicago, Nov. 10 to 12.

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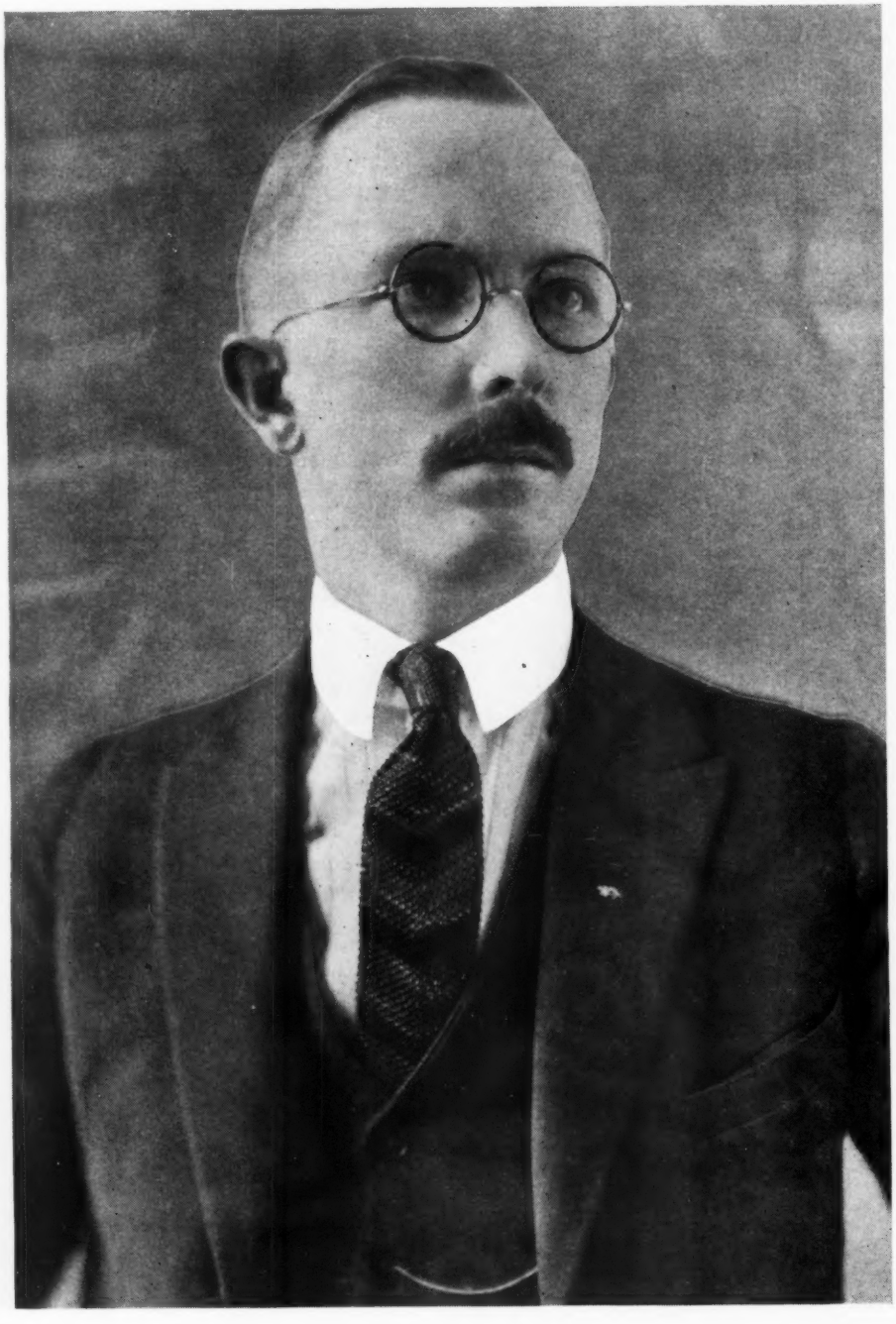
REX H. WINGET, general manager of the Cushing Refining & Gasoline Co., Cushing, Okla., practically grew up in that city, having moved there when he was 17 years old.

He entered the oil business at the Illinois Oil Co. refinery in 1916. After a few months he moved to Tulsa as manager of the Tulsa office of Anderson and Gustafson, and of Gustafson and Spencer.

In 1922, together with R. C. Jones, and E. J. Blank of Cushing, E. C. Mullendore, Cleveland, Okla., and Thomas N. Berry, Stillwater, Okla., he joined in organizing the Cushing Refining & Gasoline Co. The new company purchased the refinery of Anderson and Gustafson at Cushing. The company has another plant at Blackwell, Okla.

In addition to managing the Cushing Refining & Gasoline Co. Mr. Winget is president of the Cushing Sales Co., a subsidiary, and a director of the Blackwell Oil & Gas Co.



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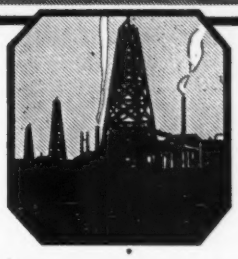

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Federal Trade Commission Reconsiders The Oil Industry's Code

By Roger B. Stafford
N. P. N. STAFF WRITER

WASHINGTON, April 3

IT IS the view of observers here who are outside the oil industry but know in general the thought of official Washington, that a liberal view will be taken by the Federal Trade Commission in its reconsideration of the code of practices for the marketing of petroleum products.

This view was expressed following the hearing March 31 by the commission of the petroleum industry's plea that the commission permanently rescind its rejection on Feb. 3, 1931, of 18 of the 21 rules of the code. The industry has been operating under the code since Sept. 1, 1929.

Doubt was felt that the present code which is still effective under a 60-day suspension of the commission's order of rejection, will be retained as it is. In its place it is expected a new code will be offered the industry. This new code would contain rules the industry considers essential to the orderly marketing of its products.

As this is written the trade commission has made no statement, nor given any hint, as to what it may do as a result of the oil industry's plea for retention of the present code.

There is without doubt, however, a background of unofficial opinion and knowledge here in Washington to the effect that all industry and business in the United States needs nursing; and there is a growing belief that the attitude of official Washington will take into consideration economic factors, as well as the law, in its relations with the petroleum and other industries.

Qualified observers here believe that business will receive far more liberal consideration from the next Congress than it has received from any preceding. They expect to see the so-called insurgent element in Congress take the leadership in working to restore prosperity. This element is not so radical as its oratory indicates, they point out, but is in reality counseled by conservatives.

Senator Gerald P. Nye of North Dakota introduced in the closing days of the last Congress two bills which are expected to aid business. One bill would amend the Federal Trade Commission act to legalize the trade practice conferences and delineate procedure in drafting codes of practices along lines the commission has followed without congressional authority.

The other bill provides for establishment of federal trade courts in each of the 10 judicial circuits of the United States for hearing civil suits brought under the anti-trust laws. These courts would expedite business litigation by removing it from the congested district courts.

It is understood Senator Nye will re-introduce his bills in the next Congress.

Under pressure from the White House, it is said, the commission will shortly announce a policy that will govern its activities. Such announcement is expected to remove the fear and uncertainty which have gripped approximately 80 industries reviews of whose codes have just been completed by the commission.

"While details will not be made known until the statements concerning each industry are released for publication," the commission an-

nounced the day before the petroleum hearing, "it may be said that the Group II rules relating to expressions of the trade, are being generally retained in the language of the industries, although there are some changes suggested by the commission. Group II rules relate to practices and methods in doing business that the industry believes are opposed to economic principles or to fairness, or ethics, or good morals, although such practices or methods are not required (sic) by law. Rules concerning practices regarded as unfair methods contrary to law are placed in Group I."

HOPE was seen by oil men that, in view of this attitude many of the rules rejected by the commission in our code may be retained as a result of the March 31 hearing.

Doubt is held in Washington that a rule against the lease and agency agreement may be incorporated in the code, however, it is revised. This is because there is no unanimity of opinion within the industry against this form of arrangement with dealers.

The lease and agency question was injected into the hearing here by the Pennsylvania Grade Crude Oil Association, and the Independent Oil Men of America. Col. E. H. Hilpp, Louisville, Ky., who spoke for the latter organization read telegrams from the Independent Petroleum Association of America (largely Mid-Continent producers who have been working for a tariff on oil) and the New England Independent Oil Mens' Association authorizing him to represent those bodies.

J. L. Frampton, Oil City, Pa., counsel for the Pennsylvania association, and other oil organizations in all parts of the country, urged that the commission make immediately operative and permanent its order of Feb. 3 in which 18 rules of the petroleum code were rejected, and that it refuse to approve any code unless it contains a resolution against the lease and agency practice or any other practice which would permit exclusive marketing arrangements

Commissioner Ferguson suggested that Mr. Frampton's clients file a complaint against persons or companies indulging in the practices he complained of. Mr. Frampton replied that they had. A private hearing in an application for a complaint made by the Pennsylvania association was held April 1.

After the March 31 hearing Rodney J. Alexander, secretary of the Pennsylvania association, made this statement:

"We have asked the Federal Trade Commission to issue complaints against certain of the largest oil companies because we believe that these exclusive dealing agreements operate in restraint of trade. Under the guise of a lease and agency agreement, a steadily increasing number of service stations are being closed to the lubricants produced and marketed by our members in Pennsylvania, New York, Ohio and West Virginia. The big company induces the station operator to sign a lease, in consideration of larger discounts or other concessions. The operator is then employed as the agent of the company leasing his station, and only the products of the leasing company are permitted to be sold.

"WE BELIEVE this arrangement to be illegal, and if it is permitted to continue unchecked, it will cost the Independent producers and refiners millions of dollars and may completely wreck their business.

"Not only are the independent oil men being deprived of retail outlets they have enjoyed for years, but the consumer is being deprived of opportunity to purchase their products.

"It is alleged that offers of larger discounts, use of misrepresentation, duress and coercion are among the means used to induce dealers to agree not to handle products competitive with those of the companies making the contracts.

"In the application, the Pennsylvania association refers to specific instances of such exclusive dealing contracts which have resulted in annual losses of millions of gallons of the products of independents.

"The volume of Pennsylvania grade crude oil produced in 1930 was sufficient to lubricate more than half of the registered motor vehicles in the United States during that year.

"The proposed respondents are charged in the application with violating Sec. 3 of the Clayton act and Sec. 5 of the Federal Trade Commission act, and the Sherman act.

"IT IS alleged that the oil companies complained of have been giving retailers an increased margin of profit to induce them to enter into exclusive dealing arrangements; that in some instances Independent operators have been induced to become exclusive dealers upon threats of establishment of competitive stations in their immediate neighborhood; that in other cases the weapon of a lessened margin of profit for the dealer has been employed; and that in many instances Independent operators have been compelled to become exclusive dealers because some of the oil companies have extended generally to motorists commercial discount privileges permitting the motorist to buy on credit, with a discount of 2 cents per gallon when the bill is paid."

Mr. Frampton told the commission that one company lost 3000 outlets through the lease and agency activities of large oil companies.

"If the commission condemns the lease and agency would you be in favor of the code?" Commissioner Ferguson inquired of Mr. Frampton, who replied:

"If you order against it we would want the outlets now under it put back where they were."

"That would follow," Mr. Ferguson added.

This was interpreted to mean that the future of the lease and agency hangs on the decision of the commission in the Pennsylvania Grade Crude Oil Association case. If the commission grants the plea for a formal complaint against a group of more than 60 companies, it means the commission believes the lease and agency to be an unfair method of competition. If the commission refuses to issue

(*Continued on Page* 22)

The Editors' Viewpoint

Proration Proving Good Operating Practice

PRORATION is proving to be more than merely an expedient to meet an overproduction situation. It is establishing itself as a sound business principle as far as ultimate yield is concerned.

Generally speaking, not only will it bring a greater return on the investment of the producer but to a very definite degree it insures that return.

These facts are becoming more and more obvious as the program of percentage takings from oil pools is enlarged and continued. Operators, skeptical at first even in their voluntary approval of the experiment, have found that proration, from both an engineering and economic standpoint, has many desirable features. Specific illustrations of these benefits are numerous and those given below are by no means isolated cases.

Some of the most outstanding examples of prorated areas are the Van and Yates pools, of Texas, the Hobbs pool of New Mexico, and several of the Mid-Continent pools in Oklahoma. It is true that, in the first two, Nature has played a hand in making proration almost essential to the life of the areas for the porosities are large and water is close behind the oil.

However, were the old unrestricted production methods in effect both pools would long since have presented water problems of unsurmountable magnitude. Engineering estimates of the ultimate recovery for these pools would have to be revised downward in no uncertain manner.

The Hobbs pool, though in no way similar to Van in the character of its pay horizon, is almost identical to Yates as far as water drive is concerned. Like the latter pool, the Hobbs area has been under proration since its discovery, and, though it is allowed to produce but about three per cent of its daily potential of 1,122,963 barrels, there is every indication that it will pay out in four years.

This may seem like a long time to that type of operator who has been used to the former expectation of his money back in the first flush year; but the slower takings are proving satisfactory in more ways than one to the lease owners at Hobbs. Proration, is slowing down production, holding up pressure, and utilizing the natural water drive to the greatest possible extent, is leading to a greater, though slower, return on the investment to the operators.

In the Seminole pool of Oklahoma the recently determined potentials, based on a 10-day gauge, showed that in the major portion of the pool the figures were considerable higher than had been expected. In many cases there had been an actual increase above the estimated figures and above the potentials taken during the previous proration period.

A detailed study of this area made by H. H. Power, chief engineer of the Gypsy Oil Co., and C. H. Pishney, engineer of the Amerada Petroleum Corp., which was presented in a paper before the A. I. M. E. in Tulsa, indicates that the ultimate yield in the Greater Seminole pool has been materially increased through proration. These men construe proration as deferred production and through the use of numerous curves prove a greater return for the field than under the former practice of highly competitive drilling and recovery.

For the most part proration has been looked on as necessary to prevent an overproduction of crude which would prove highly demoralizing to the industry. The fact that it might slow production, with desirable effects on the ultimate recovery, was certainly not one of the principal themes in the first plan. However, it afforded engineers an opportunity for study and practice of new production methods that they might not otherwise have had, at least these methods would not have been brought about so soon.

Many of the opponents of proration have lost sight of these things in their desire or need for immediate returns, while others are prompted entirely by selfish motives. Their efforts to break down the system, if successful, would undoubtedly bring about an immediate price reduction and remove the restrictions on the amount of oil which they might produce. Not only would they receive less per barrel but they would have to produce a greatly increased volume to equal their former profit. This would require open flow with all of its known attendant waste and reduction in the ultimate recovery.

When asked recently in California how long he thought proration would be in effect, E. B. Reeser, president of the American Petroleum Institute, made a quick guess of five years. His interrogator, another leading figure in the industry, stated that neither of them would live to see its end, and both have a reasonable expectancy of at least 20 years. The only qualification to these opinions is the possibility that even a better method of ratable takings may be adopted, still under proration.

In the meantime, however, proration will stick, because it will be more and more recognized as good business.—W. F. L.

Code Hearing

(*Continued from Page* 20)

a complaint, it means it believes the lease and agency method to be fair and legal.

Mr. Humphrey's question as to whether Mr. Frampton objected to any particular rule in the code was interpreted to indicate the commission, at this time, would not consider addition of any rules to the code but would act on the primary object of the March 31 hearing, which was for continuation of the present code.

The plea for continuation of the present code was presented by Roy B. Jones, Panhandle Producing & Refining Co., Wichita Falls, Texas; Henry M. Dawes, Pure Oil Co., Chicago; L. L. Stevens, Standard Oil Co. of Indiana, Chicago; E. S. Hall, Standard Oil Co. of New Jersey, New York, and W. R. Boyd, Jr., executive vice-president, American Petroleum Institute.

Chairman Hunt of the commission presided. Sitting with him were Commissioners McCulloch, Humphrey and Ferguson. Commissioner March was absent from Washington.

Commissioner McCulloch remarked the commission had received many letters and had heard rumors that the large companies were violating the rules of the code. He wanted to know how much there was to the complaints, especially those against the lease and agency agreement.

Mr. Boyd said at the outset there were many violations undoubtedly among the 16,000 signers of the code. He then explained the machinery set up by the A. P. I. to police the rules.

Mr. Jones outlined the background for each of the rules, and was frequently questioned by Commissioner McCulloch about competitive practices in our industry and whether such practices were in the public interest. Mr. Jones usually replied in substance that the practices added to the costs of distribution and, as the public eventually would have to pay the cost the practices were against the public interest. Mr. Jones also said the promiscuous lending of equipment made it impossible for the smaller companies to compete. The practices cost the large companies millions of dollars, he said.

Mr. Boyd interposed that leasing and lending of equipment was one reason why the price of gasoline had not been brought down.

Commissioner McCulloch: "What is the public interest—the interest of the man who buys gasoline—elimination or continuance of the leasing and loaning of equipment?"

Mr. Boyd replied the public interest was in elimination and the question involved was economic.

He cited as an example of the uneconomic multiplicity of outlets a survey made not long ago on the Boston Post road by a large oil company. In the 46 miles from the north corporate line of Port Chester, N. Y., to the south corporate line of New Haven, Conn., 205 independent dealer stations, 51 oil company stations, and 55 leased stations, a total 311 stations, were counted. These stations had a total of 1025 pumps, or an average of one gasoline pump every 237 feet. The gallonage was estimated at 1,682,700 a month, an average of 5410 gallons per station per month or 54 gallons per pump per day. The investment in these stations was estimated at $4,535,728.

The Sinclair case was referred to frequently. This case was an appeal from an order of the commission before the war against the loaning of equipment. Sinclair and other marketing companies appealed the order and won a decision in the U. S. Supreme Court. Loaning and leasing of equipment was

Rules That May Be Included in the New Code

1. The secret payment or allowance of rebates, refunds, commissions, or unearned discounts, whether in the form of money or otherwise, or secretly extending to certain purchasers special services or privileges not extended to all purchasers, under like terms and conditions, with the intent and with the effect of injuring a competitor and where the effect may be to substantially lessen competition or tend to create a monopoly or to unreasonably restrain trade, is an unfair trade practice.

2. Maliciously inducing or attempting to induce the breach of existing contracts between competitors and their customers by any false or deceptive means whatsoever, or interfering with or obstructing the performance of any such contractual duties or services by any such means with the purpose and effect of unduly hampering, injuring or embarrassing competitors in their businesses, is an unfair trade practice.

3. Lotteries, prizes, wheels of fortune, and/or other games of chance shall not be used in connection with the sales of gasoline and motor oils.

4. The selling of goods below cost with the intent and with the effect of injuring a competitor and where the effect may be to substantially lessen competition or tend to create a monopoly or to unreasonably restrain trade, is an unfair trade practice.

No. 1 of the foregoing is the Federal Trade Commission's standard secret rebate rules. Nos. 2 and 4 are Rules 4 and 7 of the present code as rewritten by the commission and submitted to the industry in its rejection order of Feb. 3, 1931. No. 3 is Rule 6 of the present code without change.

More of the present code may be included in the code that may be submitted to the industry in case the trade commission decides not to re-establish the present code. If a new code is submitted it is likely that the standard rebate rule may replace Rules 1, 2, 3, 8, 9, 10, 11, 13, 14, 19, and 20 of the present code.

Some of the men who are seeking retention of the present code, believe that Rule 17, pertaining to posting of prices, may be salvaged.

upheld as legal. Mr. Hall, who represented the Standard of New Jersey in that case, but who is taking an opposite view of loaned equipment now, said the winning of that litigation "brought on the industry a damnable thing."

"How are we going to approve Rule 1 in view of the Sinclair decision?" Mr. Humphrey inquired.

Mr. Stevens essayed to answer. He argued that the loaning of equipment was a violation of the Clayton act in that the value of the equipment installed for a dealer was a rebate and gave that dealer a discriminatory price for the buying of his goods.

The commission indicated it believed its standard secret rebate rule would cover several of the rules of the present code. The committee argued for more specific definition of the practices the industry wished to eliminate but the commission, in its questioning of speakers and remarks of individual members, indicated it favored broad, general statements of principle.

The recent California consent decree in which major companies confessed practices akin to price fixing came up under the discussion of Rule 17 requiring the posting of market prices. Mr. Hall argued Rule 17 had nothing to do with price fixing. Each marketer made his own price, he said.

Chairman Hunt, at that, called attention to the posting of the same price by the larger companies and Commissioner Ferguson added it was his understanding that the California case involved price fixing. Mr. Hall said such cases were isolated and not the general practice under Rule 17.

In his argument against the lease and agency Mr. Frampton said:

"The law says that contracts, combinations and conspiracies of any kind are unlawful if their purpose or their necessary or probable effect is unreasonably to restrain trade. That these contracts do unreasonably restrain trade and promote monopoly, there can be no question—and there is no question, as will be disclosed in an appropriate time and place.

"Another law says that all unfair methods of competition are unlawful—irrespective of their effect in restraining trade or creating monopoly. And it cannot seriously be contended that any method of competition which arbitrarily shuts out competitors from 50 per cent to 70 per cent, and possibly more, of the retail outlets is fair competition.

"And finally, in still another law, Congress has declared specifically and unequivocally against exclusive dealing contracts and price discriminations which 'substantially lessen competition or tend to create monopoly.'

"Here alone—if at all—the offenders may hope to obtain some benefit from the alleged fact that the lease and agency contracts are contracts of agency and not of sale. And even here—even in determining the legality of the practice under the Clayton act— their defense cannot prevail, because the facts demonstrate these relationships are not principal and agent relationships.

"Price discrimination—exclusive dealing contracts—unfair methods of competition—all of these come within the specific denunciation of the anti-trust laws. In addition, every other form of contract, combination or conspiracy, is condemned if it tends unreasonably to restrain trade.

"And the lease and agency agreements seek to accomplish—and tend to accomplish—every one of the objects which Congress outlawed: They seek to discriminate, and do discriminate, in price between the exclusive dealer and the independent dealer; they constitute a contract for the dealers representing the one company exclusively; they constitute competition which is unfair because it 'is resorted to for the purpose of destroying competition, or eliminating a competitor'; and they are intended to, and do, tend to restrain trade."

Mr. Faulkner, secretary of the Independent Gasoline Dealers Association of Maryland, said dealers feared the lease and agency and declared that Rule 2 of the present code, which sanctions the leasing of stations, was causing all the trouble about the code in his territory. Thomas Glasgow, Glasgow-Stewart Co., Charlotte, N. C., declared the lease and agency was just a rebate.

E. B. (Gene) Marlow

Marlow Goes Back to Sinclair Company

TULSA, April 4.—E. B. (Gene) Marlow, for several years a vice-president of the Sinclair Crude Oil Purchasing Co. and its successor, Stanolind Crude Oil Purchasing Co., resigned, effective April 1, and that same day moved up five floors in the Sinclair building in Tulsa to rejoin the Sinclair interests. (He is in charge of crude oil purchases for the Sinclair companies.)

In his new offices Mr. Marlow is once more in close touch with Henry L. Phillips, president of Sinclair Oil & Gas Co., who formerly was president of the Sinclair Crude Oil Purchasing Co.

Mr. Marlow came to Oklahoma with Sinclair just 11 years ago to be a scout.

In 1922 he was made vice-president of the Sinclair buying company. His duties in this position included the construction and maintenance of the large storage system of the company, the large loading rack facilities which were built to serve fields where the company had no trunk pipeline, and for the past year or more much of the work of buying and selling crude oil.

Oil Men to Honor Pioneer Refiner's 80th Birthday April 10

CLEVELAND, April 7

BILLY MUIR will be 80 years old April 10. He has witnessed petroleum grow from a gamble in the spudding in of the Drake well at Titusville to an industry whose assets in this country exceed 12 billion dollars. And Billy Muir has taken no small part in guiding its destiny and development through its adolescent days.

For the information of those members of our industry whose oil days date back only a decade or two, Billy Muir was a refinery builder in Pennsylvania, a half century ago, refinery operator, and one of the founders of the National Petroleum Association. He was a fighter with the Independent refiners for independence and a square deal.

Mr. Muir—William he was christened—retired from active work in the oil industry several years ago but he occasionally turns up at Atlantic City for the fall conventions of the N.P.A. of which he served four years as president.

As a mark of the esteem in which they hold him, 80 friends have written him letters of congratulations. These letters together with pictures of an oil derrick, an old time refinery with cheese box stills, and the latest cracking stills, have been bound into a book and will be given him April 10. A large silver bowl with an appropriate inscription commemorating his attainment of four score years, will also be given him.

Mr. Muir entered the oil industry as a contractor building refineries. He built one at Carbondale and another at Corry. He managed the plant he built at Corry for Clark & Warren. Later he went to Reno, Pa., where he remodeled the plant of S. Y. Ramage. He became superintendent of this refinery after construction work was completed.

In 1889 he went to Warren, Pa., where he built his own refinery, known as the Muir Oil Works. He organized the Muir Oil Co. In 1891 the Glade Oil Works at Warren was purchased and an affiliation effected with the Crew Levick Co. of Philadelphia, now a subsidiary of Cities Service Co.

After the turn of the century, Mr. Muir built a refinery at Titusville and bought the Pennsylvania Paraffin Works there. These plants have been consolidated with the Crew Levick for many years.

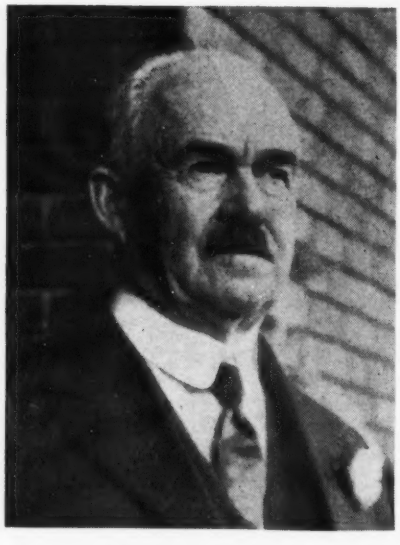
Mr. Muir maintains a home in Warren but spends his winters in St. Petersburg, Fla.

In the history of the N.P.A. from its organization to 1927, Fayette B. Dow, general counsel of the association, had this to say of Mr. Muir:

"When the association elected him president in 1912 he had already fought his way to outstanding success as an independent refiner. Independence was the very warp and woof of his being, as sturdy a man as the old oil country ever produced. Deep down inside was the love of a good fight.

"Did he plan to build a refinery at Titusville? Did the Old House send word to him that he would get no crude? 'Tell the Old House I will get all the crude I want.' When he planned to build a pipeline to get it, did the Old House intimate that they would get him? Well, the Old House could go to the devil, with his compliments.

"He built his refinery and his pipeline and he got his crude. One suspects that the Old House was really glad of his success and wished him well. Such courage could not fail to win respect, and such a man was well fitted to be president of the association."



William Muir when he was a familiar figure in the councils of Independent refiners in the eastern fields

Naming Prices Suggested In Oil States' Plan

(By Telegraph)

WASHINGTON, April 6.—The plan of the oil states advisory committee was laid before Secretary of the Interior Wilbur today by Cicero Murray, Oklahoma representative and chairman.

It probably will be submitted to President Hoover before the committee holds its conference with the Federal Oil Conservation Board April 9.

The part of the plan calling for compacts between the oil producing states providing for control of drilling and production met with approval, it was said. Mr. Murray went farther than that, however, his idea being that the body appointed under an interstate compact should suggest prices for crude and refined products. That did not obtain a sympathetic reception although Secretary Wilbur said he had no comment to make on that point.

The suggestion about prices was news to Washington. None of the reports of earlier meetings of the committee in the southwest said anything about a governing body to suggest or to fix price. The Washington idea has been that prevention of waste could be the only idea and that, if that were accomplished, economic law would see to it that those who conducted an industry without waste obtained proper profits from it.

Mr. Murray said that the things now talked about were intended to deal with an emergency but that, if there were proper control over drilling and production, such emergencies as the present would not arise.

Synthetic Lubricating Oil from Wax Made by Indiana Standard

CHICAGO, April 6 SYNTHETIC lubricating oil is being produced by the Standard Oil Co. of Indiana. Technologists have worked on the problem in oil company laboratories but this is the first time that it is known to have been made on a commercial scale.

Paraffin wax is the raw material for this synthetic lubricating oil. The wax is subjected to a cracking process, decomposed, then rebuilt to the desired oil with aluminum chloride.

The chief advantage claimed for this synthetic oil is its resistance to temperature changes which prevents it from thinning at high temperatures and from excessive thickening in cold weather.

Commercial uses for the new oil so far have been in lubricating gear shifts and shock absorbers of automobiles and engines of airplanes. The oil is being used in actual operation by the Indiana Standard, and in its airplane, the Stanolind. So far the synthetic lubricating oil has not been placed on the market as manufacturing costs are still rather great.

A MORE technical discussion of the early work of the Standard Oil Co. of Indiana in the manufacture of lubricating oils by the polymerization of olefinic hydrocarbons with aluminum chloride is to be found on page 33 of this issue.

Announcement of the new oil was made last week by the Indiana Standard before the American Chemical Society in convention at Indianapolis.

While the announcement was being made the company was conducting test of lubricating oils in automobiles at the Indianapolis speedway a few miles away. Thirteen cars were being driven to test the company's motor oils, Polarine and Iso-Vis. Results will be announced April 9 in a radio program through 14 mid-western stations. So far as is known the new synthetic lubricating oils were not being tested in these cars.

Several years of work is represented in the new oils. Chemists of the Indiana Standard started with the idea that the best of complex mixtures of hy-

One of the 13 stock automobiles participating in the 30-day road test of Indiana Standard motor oil products at the Indianapolis speedway. Results of the tests will be announced on the Standard's radio hour, April 9, through 14 mid-western stations. Autos were painted white for safer driving at night

drocarbons could not possibly constitute the ideal lubricants, so the press announcements stated.

Chemists first determined what single hydrocarbon or narrow group of hydrocarbons makes the best lubricant, then whether such a lubricant can be made by synthetic chemistry.

Studies indicated the ideal lubricant would be made of hydrocarbons having in their molecules about two hydrogen atoms for each carbon atom. It was found, when such oils were made synthetically, that those having the carbon atoms arranged in long chains were much superior to those in which the carbon atoms were connected in the form of rings or clusters.

In many natural oils these highly desirable hydrocarbons appear to be present in small proportions, but it is impossible to separate them from other inferior hydrocarbons associated with them, the announcement continued.

The problem was to obtain this synthetic oil on a large scale.

After studying different methods of synthesizing hydrocarbons the chemists found the most practical process was the combination, or polymerization, of certain hydrocarbons known as olefines which had the desired composition of two atoms of hydrogen to one of carbon.

Some olefines gave an oil inferior to the natural oil, such as Ethylene which can be made from grain alcohol or from refinery gases. Cracked paraffin wax appears to give the best product.

The cracking process is similar in principle to that used in producing gasoline, and under the given conditions the wax yields the required type of olefines for producing the superior grade of lubricating oils.

The announcement said the synthetic oils could be produced in any desired viscosity, that it has a pale straw color, high resistance to oxidation and sludging, low pour test, and low volatility, in addition to being more resistant to changes in temperature.

Results of the tests on the Indianapolis speedway will be broadcast April 9. The tests were under the control of the American Automobile Association officials, and financed by the Indiana Standard.

Fifty drivers for the association began the tests with 13 autos on March 16. Press announcements state the tests seek facts on gasoline and oil consumption at various speeds, relative merits of different grades of oil, wear on cylinders, bearings and other parts, and accumulation of carbon.

All autos were stock model sedans, and from eleven different manufacturers.

Sousa's band and Barney Oldfield, old time race driver, will be the stars on the radio program for an hour beginning at 9 p.m. central time, April 9. Between musical numbers Oldfield will recount the high spots of his racing career.

Automobile association officials, Oldfield and the announcer will tell results of the Indianapolis speedway test.

Fourteen stations will carry the program. These are WMAQ, Chicago; WXYZ, Detroit; WOWO, Fort Wayne; KOIL, Omaha; KLZ, Denver; KMBC, Kansas City; KMOX, St. Louis; WBCM, Bay City, Mich.; WFBM Indianapolis; WCCO, Minneapolis; WISN, Milwaukee; KSCJ, Sioux City; KFH, Wichita; and WMT, Waterloo.

Rail Shippers' Association Formed By Mid-Continent Refiners

By Telegraph

FORT WORTH, April 6

A GROUP of traffic men representing about 35 southwestern refineries with an aggregate capacity estimated at over 200,000 barrels daily, but having no gasoline pipeline affiliations laid plans here Monday for formation of an association to be known tentatively as the Mid-Continent Rail Shipper's Association.

The purpose of the association was announced as being to seek a solution to the problems confronting the member refineries as a result of proposals by certain railroads to reduce the short haul rates on gasoline and kerosine from refinery centers, pipeline terminals and lake ports.

The meeting was called by M. H. Champion, traffic manager for the Anderson-Prichard Oil Corp., Oklahoma City. Mr. Champion said that he and several other traffic men with whom he had discussed the problem felt that with individual companies seeking solutions little could be accomplished but that through an association the individual suggestions for a solution could be welded together and some definite results obtained.

A board of governors consisting of nine members was appointed following general discussions held behind closed doors. This board consists of L. B. Simmons, general manager of the Rock Island Refining Co., Duncan, Okla.; M. H. Champion, Anderson Prichard Corp., Oklahoma City; Walker Wilson, Cosden Oil Co., Fort Worth; J. L. Morgan, Champlin Refining Co., Enid; C. E. Varner, Kanotex Refining Co., Arkansas City, Kans.; M. R. Anderson, Lion Oil Refining Co., Eldorado, Ark.; H. B. Cole, Taylor Refining Co., Taylor, Tex.; C. E. Cadieux Petroleum Refractionating Co., Tulsa, and J. H. Davenport, Panhandle Refining Co., Wichita Falls, Tex.

Several committees were appointed to perfect plans for the organization and another meeting was planned for the near future. More definite action was anticipated at the next meeting.

Traffic men instrumental in the proposed organization said after the meeting that the proposal to reduce rates for short hauls presented a situation to them that would all but spell doom unless the carriers made some changes in the rates so they could compete with the pipeline-short-rail-haul rates. It was pointed out that if the proposed short haul rate reductions become effective refiners having no pipeline connections would be unable to move gaso-

line in competition with these pipelines.

While pipeline tariffs call for the present rail rates to terminals and in at least one instance provides truck rates from these terminals the short haul rates proposed actually would result in a lower freight cost than if the gasoline was moved by all-rail shipments to the same destination according to several traffic men present. This would restrict refineries without pipeline facilities to their immediate territories and penalize if not actually prevent them from competing for business where there was a long rail haul involved.

Invitations were sent to approximately 70 companies in Kansas, Oklahoma, Texas and Arkansas Mr. Champion said. No invitations were sent to companies having pipeline affiliations. Approximately half the companies invited sent representatives and other companies replied by letter that while their representative would be unable to attend they were interested in the proposition and wanted to be kept informed.

Venezuela Gulf Superintendent Dies

NEW YORK, April 7.—Dan C. Steele, Sr., Houston, for 14 years with the Gulf oil interests in Mexico and Venezuela, died at Cabimas, Venezuela, March 29. He was 60 years old.

Mr. Steele was with the Mexican Gulf Oil Co. in Mexico from 1917 to 1929, serving as warehouseman, field office manager and material foreman. He was lately a superintendent with the Venezuela Gulf.

He also was superintendent for the Mexican Eagle Oil Co. in Mexico in 1912 and 1913 and later with the Penn Mex Fuel Co. in Mexico, according to William T. Wallace, vice president of the Venezuela Gulf company.

Mr. Steele was born at Pennington, Tex., Dec. 23, 1871. His body is being brought back to Houston for burial.

Correction

On page 55 of this issue appears an advertisement signed by the Winkler-Engineering Company. This is an error. The correct signature is The Winkler Koch Engineering Company.

Economic Studies and Engineering Problems on A.P.I. Program

NEW YORK, April 3 MOTOR fuel refinery engineering problems and estimates of production and consumption of crude and gasoline for the period April 1 to Sept. 30, will be the main subjects to be discussed at the first mid-year meeting of the American Petroleum Institute's division of refining which will be at the Statler Hotel, St. Louis, April 15 and 16.

Discussion of the work on motor fuel research being conducted at the U. S. Bureau of Standards will take up the session on the afternoon April 15. The sessions of April 16 will be of interest to the refinery engineer, who will hear reports on alloy steels for high temperature work, fire protection and disposal of refinery wastes.

There will be meetings of the standing committees of the division April 14, 15 and 16, including these: Accident Prevention in Refineries; Refinery Equipment; Disposal of Refinery wastes; Fire Prevention in Refineries; Refinery Technology; Standardization of Refinery Equipment; and Testing Methods and Specifications.

The program follows:

April 15—Motor Fuel:

Progress Toward a Standard for Determining the Anti-Knock Value of Motor Fuels, by H. C. Dickinson, U. S. Bureau of Standards, Washington, D. C.

Automobile Fuel Line Temperatures and Vapor Lock, by Oscar C. Bridgeman, U. S. Bureau of Standards.

Report of Committee on Testing Methods and Specifications, by K. G. Mackenzie, chairman, The Texas Co., New York.

Report of Committee on Refinery Statistics and Economics, chairman R. C. Holmes, The Texas Co., New York.

Report of Federal Oil Conservation Board's Volunteer Committee on Petroleum Economics.

April 16—Refinery Engineering:

The 18-8 Iron-Chromium-Nickel Alloy with Particular Reference to Its Characteristics for Cracking Coil Service, by H. D. Newell, Babcock & Wilcox Tube Co., Beaver Falls, Pa.

Corrosion Problems Affecting Oil-Vapor Condensers, by A. E. Pew, Sun Oil Co., Philadelphia, Pa.

Report of Committee on Corrosion of Refinery Equipment. Chairman, Walter Samans, The Atlantic Refining Co., Philadelphia.

Manual on Fire Protection in Refineries, C. H. Haupt, Standard Oil Development Co., Elizabeth, N. J., chairman, Committee on Fire Prevention in Refineries.

Manual on Disposal of Refinery Wastes, J. S. Hess, Sinclair Refining Co., New York, chairman, Committee on Disposal of Refinery Wastes.

Report of Committee on Accident Prevention in Refineries, chairman, C. W. Smith, Standard Oil Co. (Indiana), Chicago.

Round-table discussions will follow reports of the Federal Oil Conservation Board, the manual on fire protection and manual on refinery waste disposal.

R. C. Holmes, president, The Texas Co., New York, is chairman of the division of refining of the institute.

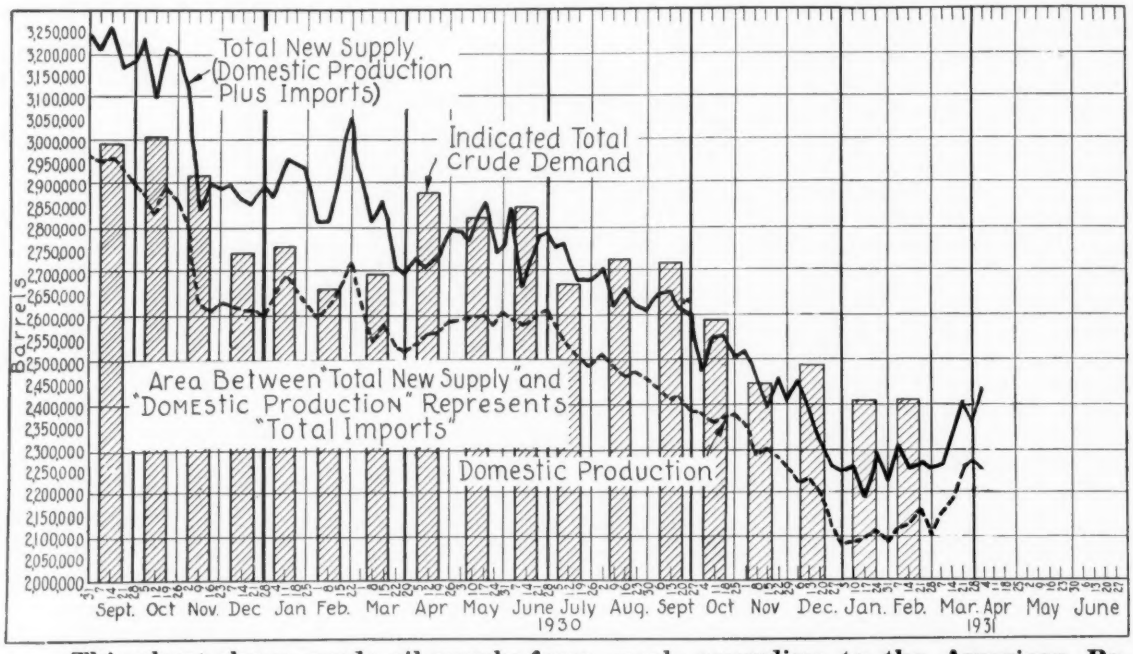
Independent Producers Plan Convention

TULSA, April 4.—Arrangements are now being made for the annual convention of the Independent Petroleum Association of America, which will be held in Tulsa, April 24. The directors of the association will meet the preceding day.

Formal program has not been completed. Russell B. Brown, executive secretary, says that the principal business before the meeting will be the working out of arrangements to carry the campaign for a tariff on oil to the non-producing states. The oil producing states are well in line on this movement but opposition enough to defeat Congressional action has come from states which are consumers only.

Officers for the ensuing year will be elected on April 24.

Review of Late Production News


Total New Supply (Domestic Production Plus Imports)
Indicated Total Crude Demand
Area Between "Total New Supply" and "Domestic Production" Represents "Total Imports"
Domestic Production
Barrels
Sept. Oct Nov. Dec Jan Feb. Mar Apr May June July Aug. Sept Oct Nov Dec. Jan. Feb. Mar. Apr May June
1930
1931

This chart shows crude oil supply from week according to the American Petroleum Institute reports (solid line) in relation to indicated crude oil demand as taken from the Bureau of Mines monthly reports (shaded columns).

DAILY average production in the United States decreased 23,000 barrels the week ended April 4, to 2,252,100 barrels, according to the American Petroleum Institute.

Crude oil imports doubled the previous week's imports, being at the rate of 174,855 barrels the week ended April 4. Total new crude supply increased 64,600 barrels, to 2,426,955 barrels.

Production in Oklahoma declined 41,250 barrels. East Texas output gained 23,200 barrels. California declined 5300 barrels.

Current production in this country by pools is found on page 97.

California

CALIFORNIA production news was particularly featureless the past week although several interesting wells in the San Joaquin Valley and Coastal areas promised early developments.

High-gravity producing oil wells in several of the Los Angeles Basin fields were to be shut in, it was reported, because of recent reductions in posted prices.

In the San Joaquin Valley field of Lost Hills, George F. Getty was drilling below 3950 feet after effecting a partial water shut off. A string of 8⅝-inch casing was recemented three times against a water pressure that exceeded 1300 pounds without getting a watertight job. This project is the most important test now under way in California because of its possibilities of uncovering high gravity production in the Temblor formation.

Texas, New Mexico, Louisiana

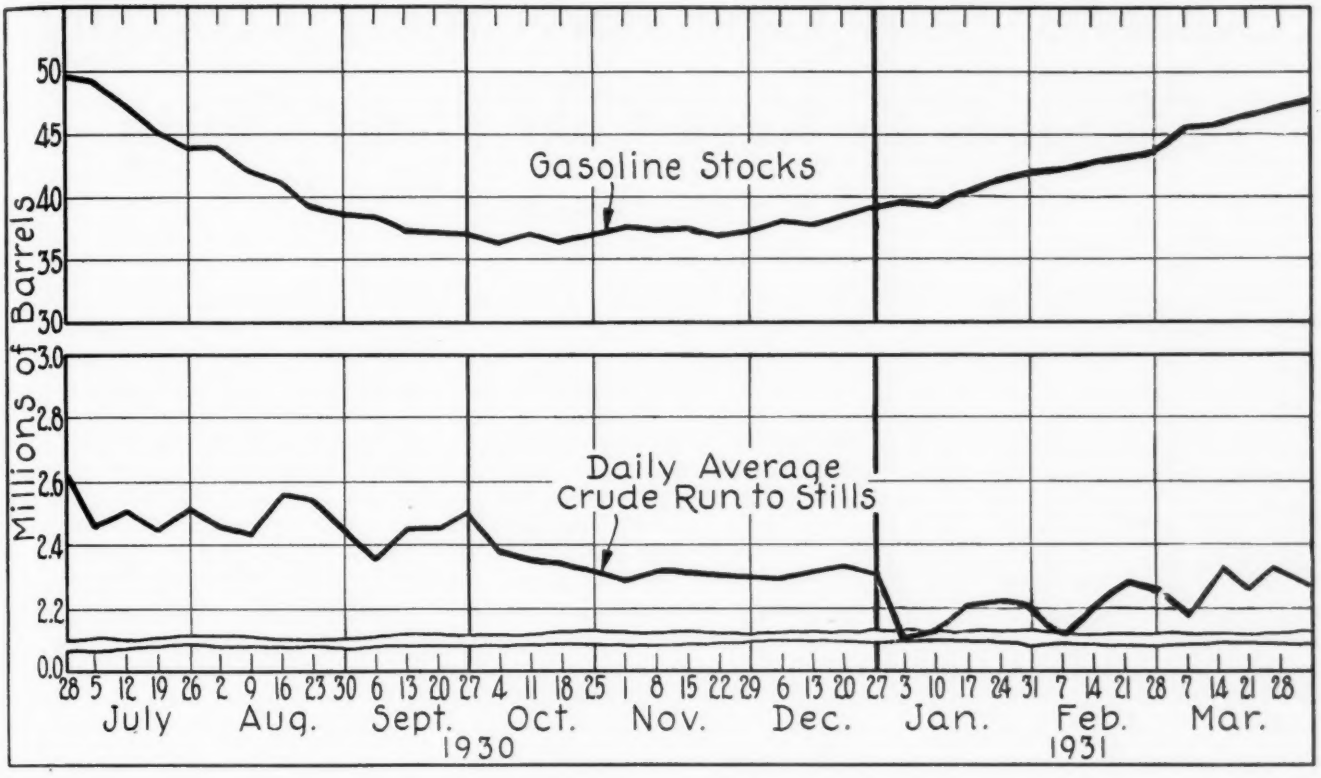
A WELL three miles north of earlier Kilgore development, in northwestern Rusk county, indicates that production of the Sabine Uplift region in East Texas may connect up with the Lathrop area, near Longview, Gregg county. The two areas are in the same general district, but drilling has not definitely shown that production will be continuous through the 18-mile stretch from original Kilgore wells to those in the Lathrop area.

The present significant well is the H. W. Elliott No. 1 Andrews, William F. Hyde survey, which at 3642-3653 feet flowed 450 barrels in one hour and 20 minutes through one and one-half inch choker on casing. It flowed 1182 barrels in three hours under various size chokes.

Oklahoma, Kansas

FIELD developments in the Mid-Continent were again in the doldrums the past week, with no new fields indicated or extensions to present pools drilled. Because of the opening of wells for four hours continuous production to establish new potential ratings, the Oklahoma City field reached a new high mark for a single day's output. In the 24 hours ended at 7 a. m. April 2 production was 233,421 barrels. This came from 92 of the 755 wells in the field.

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.



Refiners Cut Crude Runs 100,000 Barrels

By Telegraph

NEW YORK, April 7

REFINERS reporting weekly to the American Petroleum Institute reduced their crude runs 100,500 barrels daily average in the week ended April 4. Stills were operated at 62.5 per cent of capacity during the week as compared with 65.3 per cent in the week ended March 28.

Gasoline stock figures for April 4 are not comparable with those of the previous week because of a change in the method of reporting California stocks. California stocks for April 4 were announced as being 14,089,000 barrels as compared with 15,802,000 barrels the previous week, a cut of 1,813,000 barrels.

This cut does not indicate that shipments exceeded production by that amount. The California group eliminated natural gasoline storage and some stocks held at terminals outside the continental limits of the U. S. In next week's report it will be possible to show the amount of stock eliminated from the figures.

East of California gasoline stocks were increased 345,000 barrels. Texas refiners made a substantial cut in stocks but all other groups reported increases.

Fuel and gas oil stock figures for the country as a whole are not comparable with those of the previous week because of similar changes in California which eliminated a large part of 1,672,000 barrels from refinery figures.

Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Gasoline		Gas & Fuel Oil		Cracked % of Total Capacity Reporting	Gasoline Production Daily Av. Production (Barrels) Week Ended	
		April 4	Mar. 28	April 4	Mar. 28	April 4	Mar. 28	April 4	Mar. 28	April 4	April 4	Mar. 28
East Coast	100.0	470,700	476,400	76.8	77.8	8,931	8,690	7,692	7,244	90.3	77,800	85,700
Appalachian	93.8	97,600	93,400	73.7	70.5	1,842	1,766	1,162	1,107	94.6	17,400	19,300
Ind., Ill., Ky.	97.5	276,000	297,000	72.4	78.0	5,878	5,743	3,108	3,082	95.2	72,900	65,100
Okla., Kans., Mo.	89.4	232,700	257,900	56.5	62.6	3,484	3,468	3,709	3,727	90.0	53,900	53,300
Texas	91.9	491,700	549,400	66.1	73.9	7,871	8,088	8,339	8,096	95.9	112,700	96,300
La., Ark.	98.3	141,700	148,400	54.1	56.6	2,081	1,994	2,334	2,254	97.7	35,300	33,600
Rocky Mountain	93.1	45,200	48,600	32.4	34.8	1,900	1,893	830	829	100.0	12,000	14,600
California	98.8	476,300	461,300	53.7	52.0	14,089	15,802	99,259	100,929	100.0	41,400	41,700
Total	95.7	2,231,900	2,332,400	62.5	65.3	46,076	47,444	126,433	127,268	94.9	423,400	409,600
Texas (Gulf Coast)	100.0	377,100	417,300	71.2	78.8	6,759	6,950	6,051	5,791	98.5	9 2,600	78,000
La. (Gulf Coast)	100.0	95,000	100,900	64.4	68.4	1,921	1,805	1,346	1,213	100.0	26,300	24,000

Gasoline Plant Operators Study Economy Measures to Keep Old Plants Going

By Lawrence E. Smith

N. P. N. STAFF WRITER

THURBER, Tex., March 31

ECONOMY in gasoline plant operation, treating of gasoline, handling of warehouse and stores stocks of materials, operation of fractionating equipment—these were subjects that interested the 120 men who attended the annual plant operators meeting on March 31 at Thurber. This meeting has become one of the fixed annual events of the general Ranger district and quite distinctly belongs to the men who run the plants.

This year's gathering, while sponsored by the Natural Gasoline Association of America, had as host the Texas Pacific Coal & Oil Co. Thurber belongs to that company. Here are the operating headquarters of the company's natural gasoline division and its general accounting offices. The operators meeting was held in the company's well equipped club house. Dr. E. R. Lederer, vice-president of the T. P. company and president of the Natural Gasoline Association, presided at the morning meeting and J. R. Jarvis, Lone Star Gasoline Co. superintendent, at the afternoon meeting.

Naturally enough, the plant operators first thought is how to better the showing of his plant and, as one of the speakers said, in these days of low prices for the product, such betterment—lower cost of operating—is the only reason for keeping some of the plants in old settled districts such as the Ranger territory in operation at all.

Much of the equipment has exceeded its normal life and its operation tends to be expensive. The present production and that which may be expected is such, however, that purchase of new equipment is not warranted and costs must be cut or many plants shut down. Faced with these facts, the plant operator has more than an abstract interest in reducing costs. In many cases it means to him the difference between keeping his job or looking for another.

Discussion of cost reductions was started in a formal way by L. B. Wood, Phillips Petroleum Co. He first took up the subject of labor. Most of the Phillips plant men, he said, can handle any of the plant work and they have shown a willingness to do so. Use of automatic controls and the shutting down of various parts of plant machinery in old districts has lightened the tourman's ordinary duties so that he has considerable time to fill in on other tasks.

Many of the plants in the general Ranger district are operating at loads greatly reduced from that which the plants were designed to handle, hence there is considerable surplus equipment. It has been economy, said Mr. Wood, to make several changes in the manner of operating equipment, tightening up all around to use part of the equipment at a fuller load and shutting down the rest.

Oil flow through heat exchangers has been changed, resulting in increased velocities and better heat transfer. Some oil cooling coils have been shut down, as have fire stills, knockout boxes, boilers, compressors, coil pits and pumps.

Sprays in coil pits have been raised so that there is a greater fall of spray water and better cooling temperatures. Under some conditions with the reduced loads operating pressures have been changed so as to eliminate the low stage vapor compressor which is used with low pressure fractionators.

Mr. Wood said that many of the steam pumps installed are now much above the capacity required and it has been difficult to run them at the slow speeds which are needed to make for smooth operation. The Phillips company has found, he said, that often where pumps are in good condition they can be slowed down materially by plugging part of the steam intake ports with hard wood or babbitt metal and mak-

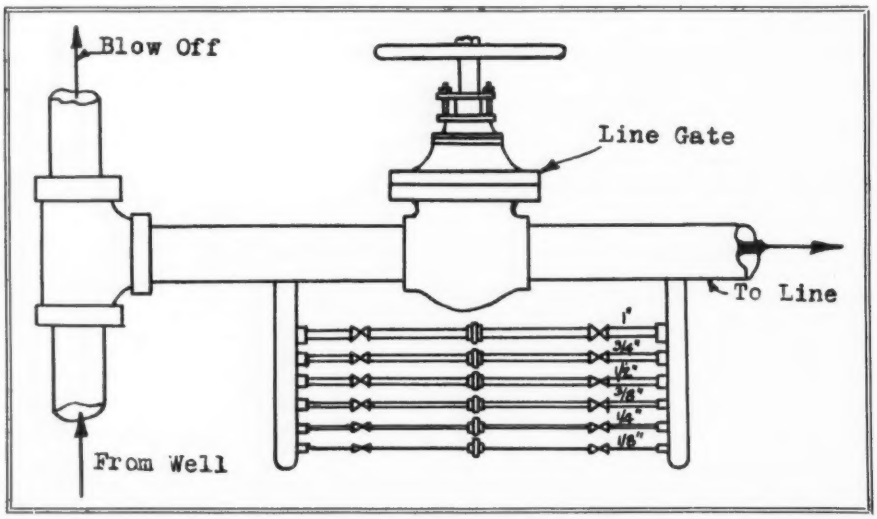


Fig. 1—High pressure line feed

ing the necessary adjustments on the lead of the valves. Such plugging material is easy to remove when the pump is required for full capacity.

Boiler Economies Important

Boiler operating expense is an important item and one that the operator can reduce in various ways, Mr. Wood asserted. Standardization on a certain type of burner proved helpful in the Phillips company's practice. Nearly all of the boilers are of the locomotive type field boilers and it was the original practice in this company to set them several feet above ground with a brick combustion chamber underneath.

A number of kinds of burner were used and with this setting the inside of the combustion chamber was heated to incandescence. Thus there was a high radiant heat load in addition to that of convected heat put upon the boiler firebox surface and tube sheet.

Sometimes the combined heat load was so excessive as to cause leaky flues and buckled crown sheets where scale deposits were formed. The locomotive type boiler is not made to withstand such excessive heat over a long period. It was also found that corrosion occurred where the mud rim rested upon the brick combustion chamber.

Present practice, Mr. Wood said, is to install burners of the multiple bunsen type and remove the brick firebox. It has resulted in considerable reduction of expense of boiler maintenance.

Another item considered by Mr. Wood to be worthy of close attention is the condition of gasoline lines to loading racks. They develop leaks that are difficult to locate. The Phillips operators have found that by filling the line with water and holding high pressure on it leaks show up that have escaped detection by line walking and fire testing. Water will force its way through the soil where gasoline cannot be noticed.

Water supply lines also are worthy of close attention. Mr. Wood told of one that through incrustation of iron oxide had been reduced in delivery capacity to about 50 per cent of its original rating. Treatment with a water compound brought it back to more than 90 per cent of its true capacity and saved the cost of a new line.

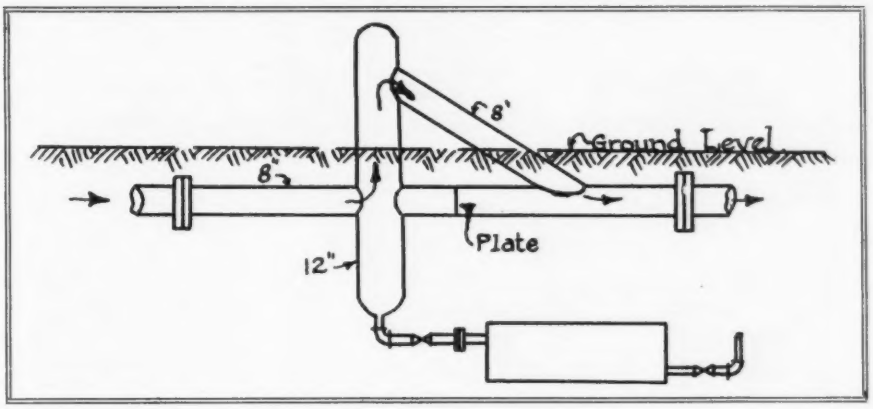


Fig. 2—High pressure line drip

Engine room maintenance came in for much discussion by a number of operators. Mr. Wood said that high costs are usually results of lubrication, cooling and ignition troubles. Jacket scale trouble and high lubricating costs often go together and Mr. Wood said that the use of a closed cooling water system which uses condensed water is highly effective in keeping down costs. Such a cooling system, well designed, and the use of the proper lubricant will eliminate cracked and scored cylinders and heads.

Dean Hiatt, Texas Pacific Coal & Oil Co., who as chairman of the plant operators committee for Texas of the Natural Gasoline Association, had charge of the program

Mr. Wood said that in times such as the present "false pride" has no place and he recommended a visit to the junk pile. Much discarded material, such as cylinder heads and pump castings, have been reconditioned and made to give good service.

Many of the small items about a plant can be looked into with profit, said Mr. Wood. The Phillips company in the Ranger district has almost eliminated the cost of ice by putting in small homemade ice machines. These are made of 12½ and 15½-inch casing and are capable of making 150 to 300 pounds of ice per day. They use as refrigerant the high stage vapor compressor condensate or fractionator reflux.

Charts for recording thermometers and pressure gauges often can be used more than once, Mr. Wood said. Most temperatures that are recorded remain within narrow limits throughout the 24 hours and there is usually enough difference in the operating temperatures recorded to permit the use of different colored inks by which means they can be run again.

Some practical aspects of operating field lines and drips were presented by R. L. Ponsler, of the Consolidated Gasoline Co. In his description of the method commonly used for feeding gas from high pressure wells into the field lines, Mr. Ponsler prepared a drawing which is shown as Fig. 1 herewith.

This he described as "an improvement over many of the old installations using a regulator for reducing heavy pressures and a gas fired heater installed on the line for preventing freeze-ups. It is common prac-

Left to right: E. W. Zublin, Texas Pacific Coal & Oil Co.; Dr. E. R. Lederer, vice-president of same company and president Natural Gasoline Association and Paul M. Raigorodsky, president, Petroleum Engineering Inc., Tulsa

tice at this time to install a series of small by-pass lines with high pressure gate valves in each, around the main line gate in the line feeding from the well to the field line.

"This series of by-pass lines may vary to suit conditions as to the size of the well and the volume of gas desired to be taken from the well. A typical installation would be one, one-eighth; two, one-quarter; one, three-eighths; one, one-half and one inch by-pass. On a well having a rock pressure of 1200 pounds, by using any one or any combination of these by-pass lines practically any desired volume of gas may be taken from the well without the usual trouble of freezing and without the necessity of installing heating devices.

"In one particular instance, a well operating under 900 to 1000 pounds pressure delivered over two million feet of gas per day through a half-inch by-pass during the coldest winter weather without an interruption by freezing. In fact, the by-pass was warm to the hand during extremely cold weather although the large gas separator was covered with frost from the expansion."

Special Drips Required

Mr. Ponsler also gave some practical advice on the type of drips used on lines. In most cases, he said, ordinary drips placed at the low points in the field lines will suffice to relieve the line of moisture and condensed gasoline. In all important high-pressure lines, where service must not be interrupted and in lines which carry large amounts of condensate, a special type of drip should be used in which a reversal or sharp turn in the direction of the flow of gas is employed to separate out the entrained condensate.

"Many designs of such a drip are used," said Mr. Ponsler. "However, one is here mentioned which is serving satisfactorily in many high pressure lines. (See Fig. 2). In a section of line pipe is welded a flat plate which serves as a dead end to the flow. A large diameter section is welded at right angles and vertical to the line just ahead of the plate, forming a cross.

"From the top of the larger section a pipe is welded at an inclined angle and connecting to the main line pipe just beyond the plate. The bottom portion of the large diameter vertical pipe which extends any convenient distance below the level of the line serves as a moisture collection chamber, to which an ordinary drip may be connected for greater capacity. The advantages of this form of separator drip are that it can be constructed on the ground with material available, it is adaptable to high pressure and it efficiently separates out the fluid from the gas."

Mr. Ponsler touched upon the well recognized bad effects of air in vacuum lines, saying that this source of trouble requires constant vigilance. Where it is possible to put a vacuum line out of service for a short time, the most effective way to locate leaks is to put residue pressure on the line and then make an inspection. In case there are a number of small leaks they can be discovered by carrying a lighted blow torch along the line just above the pipeline ditch. The torch should be carried on a small pole to prevent the one who carries it from being burned when a large leak is found. A mile of line can thus be inspected in a few minutes.

New Treating Product

Considerable interest was aroused by the paper of Hoke Martin, of the Mathieson Alkali Works, on treating light gasoline which is published elsewhere in this issue. Mr. Martin reviewed the customary methods and in conclusion gave some information on a relatively new product which the Mathieson company has introduced.

Some of the practical aspects of plant operation were discussed by H. S. Hefner of the Texas Pacific Coal & Oil Co. He spoke of the day-to-day problems in the plant from the viewpoint of the operator with special reference to keeping the plant in balance by proper maintenance of control devices.

The new natural gasoline specifications were described to the operators by E. W. Zublin of the same company. He related the specifications in a practical way to plant operations.

Engine room operation was handled capably by R. V. Burns of the Lone Star Gasoline Co. and C. F. Wilson of the same company, told of the present day methods of handling plant materials, showing how general office records are kept. The problem of properly accounting for many thousands of dollars worth of stores is a large one and can only be handled satisfactorily by close cooperation between storekeeper, operator and general office accounting, Mr. Wilson said.

Norman Rector, chief operating engineer of Petroleum Engineering, Inc., read a paper on the operating of fractionating towers.

The evening session was devoted to a short program of safety talks by A. W. Breeland, safety director of the Lone Star Gasoline Co., Don Wallace, safety director of the Mid-Continent Oil & Gas Association and H. N. Blakeslee, of the American Petroleum Institute. Following this a dance was given in the Thurber Club.

Rectifier, Pressure, Temperature Control Govern Quality of Gasoline

By Norman K. Rector*

(Presented before the Gasoline Plant Operators' Meeting, Thurber, Texas, March 31, 1931)

TO MAKE the various adjustments necessary for the efficient operation of rectifying equipment it is necessary to have a working knowledge of the underlying principles involved. To understand why it is necessary to have the operating conditions, such as temperatures, pressures, etc., constant, it must be understood that the product of a rectifying unit is a constant vapor pressure mixture and that the rectifier does not deliver, necessarily, a product with a definite or constant A. S. T. M. recovery or gravity. For this reason it is necessary that *all* of the conditions of operation remain constant as will be pointed out later.

Reboiler

The most important conditions to be kept constant are the pressure and temperature in the reboiler from which the final product is derived. For our purpose, let us assume that the desired product is AA grade gasoline and that the composition of the pentanes and heavier portion of the feed is such that a mixture of 65 per cent pentanes and heavier and 35 per cent butanes by liquid volume will give us this product.

Let us further assume that this rectifier unit is being operated at a pressure of 180 pounds gauge. The temperature on the reboiler then will be a temperature sufficiently high to raise the vapor pressure of the desired finished product to 180 pounds gauge or approximately 195 pounds absolute, which pressure by the application of Raoult's Law may be calculated.

The total vapor pressure of the mixture will be the sum of the partial pressures of each of the constituents in the vapor in equilibrium with the mixture, therefore the reboiler temperature will be determined by assuming an approximate temperature based on former experience and then trying by the use of Raoult's Law to see if this temperature would give us vapor pressure equal to the column pressure assumed.

We could start by assuming the reboiler temperature and work directly to find the operating pressure, if this had not been established. In this particular case, we are assuming that our bottom product is to be a mixture of 65 per cent pentanes and heavier and 35 per cent butanes by liquid volume. On a mol-fraction basis the composition of this gasoline would be 43 1/10 per cent butanes and 56 9/10 per cent pentanes and heavier.

The vapor pressure of butane (a mixture of iso and normal butanes) at 270 degrees would be 360 pounds, the vapor pressure of the pentanes and heavier portion (assuming the average composition between normal hexane and normal heptane) would be about 70 pounds. Forty-three and one-tenth per cent of 360 pounds equals 155 pounds, 56 9/10 per cent of 70 pounds equals 40 pounds. The sum of the partial pressures; 155 pounds plus 40 pounds equals 195 pounds absolute or approximately 180 pounds gauge which was our operating pressure assumed.

It may be understood therefore that the function of the reboiler is to evaporate any excess butanes and to hold the vapor pressure of the product to exactly 195 pounds absolute at 270 degrees, in this particular case, and it will do so as long as the controls function correctly or the reboiler is not overloaded.

This does not mean, however, that the product will be Grade AA gasoline or have any definitely established specific gravity or A. S. T. M. recovery for if the other rectifier equipment is not functioning satisfactorily or there is not sufficient butane to produce this vapor pressure, propane or even lighter fractions may be present in the finished gasoline.

Column

The most important piece of equipment in the rectifying unit and that generally given most consideration, is the column. It is the function of the rectifier column to make the separation between the desirable and undesirable constituents in the feed. This separation is made by a series of distillations taking place on each and every tray.

From the bottom to the top of the column, on each tray, there is a combination of evaporation and condensation taking place, that is, the heavier fractions are being condensed, giving up heat which in turn evaporates lighter fractions in contact with them.

The composition of the liquid on each tray is different and the temperature of the liquid on any tray is that temperature required to produce a vapor pressure of the mixture equivalent to the column pressure. The feed to a rectifier column is generally somewhere near the middle of the column or the middle tray.

Most rectifier units are

*Petroleum Engineering, Inc.

equipped with feed manifold, allowing choice of several different trays on which the feed may be injected to the column. The choice of the proper tray on which to place the feed is sometimes difficult and seldom correctly made. The temperature of the feed should be that temperature which will bring the vapor pressure of the mixture up to the column pressure.

The feed should be injected to the tray on which the temperature is nearest this feed temperature. Most rectifier units are equipped with preheaters and the feed is heated a few degrees above the heat exchangers outlet temperature.

AS A general rule no very great effort is made to determine the exact temperature at which the feed should enter but the temperature of the feed is generally matched to the temperature of the tray to which it is connected. This would be of great importance only when operating with the absolute minimum number of trays.

As the feed enters the column, at a temperature near the temperature of the tray on which it enters, the lighter fractions present in the feed start upward and the heavier fractions start downward due to the flow of liquid downward from tray to tray through the column and flow of vapors upward through the column.

Due to this flow of liquid and vapors, the liquid on the lower trays is composed principally of the heavier fractions present and the composition on the higher trays is a mixture of the lighter fractions, and for this reason the temperature from tray to tray changes throughout the column since the temperature necessary to produce a vapor pressure equivalent to column pressure is greater for the composition on the lower trays than on the higher.

In order that liquid will be flowing downward through the column above the point of feed, it is necessary to feed to the column a liquid from some outside source which, in standard practice, is a reflux condenser.

It is not the purpose of this paper to go into the design of fractionating columns, rather, our consideration is the operation of these columns but it might be stated that the number of trays necessary in a fractionating column depends on the difference in the vapor pressure of the components between which the separation is to be made and on the amount of reflux to be pumped to the column.

Reflux quantities are ordinarily spoken of not as certain volumes but as reflux ratio. The reflux ratio is generally based on the total amount of the overhead product in the liquid state. In other words, if we had a rectifier to which we pumped 35,000 gallons a day and obtained a product of 25,000 gallons a day, the overhead product would be the difference or 10,000 gallons a day and if we used a reflux ratio of 10 (10:1) the reflux quantity per day would be 100,000 gallons.

To obtain a certain degree of fractionation it is necessary to use a larger reflux ratio if the number of trays is small and a smaller reflux ratio is necessary if there is a large number of trays.

Our problem is to separate the propane and lighter fractions from the desirable butanes and heavier fractions. It has been found in actual practice that at least 24 trays are required to make this separation with the amount of reflux it is economical to pump back to the column. The tendency is toward more trays than 24 and most companies are now standardizing on 30 trays. We will assume then, that the unit with which we are dealing has a fractionating column with at least 24 trays.

Reflux Condenser

The function of the reflux condenser is to condense a sufficient amount of the waste products from the top of the column to be circulated back to the column as before mentioned. There are two methods of circulating this reflux back to the column; one method is by gravity with the reflux condenser mounted above column and the other by pumping the reflux with the condenser placed at any convenient location.

When a rectifier is first started there, of course, is no outside reflux to be pumped back only inefficient fractionation takes place above the point of feed by the reflux condensed in the column until outside reflux is condensed and gradually built up from the fractions leaving the top of the column. This reflux consists of a mixture of all the components existing in the top or rectifier residue but the principal component of the reflux will be the heavier fraction of the residue since it condenses more easily.

In the average gasoline plant where all the propane and part of the butanes are taken overhead, the reflux will consist of a mixture of propane and butane. The top temperature of the column or the temperature on the top tray will be the temperature necessary to raise the vapor pressure of this reflux mixture to the operating pressure of the column and the control of this top temperature should therefore not be attempted in the operation of a unit. However, the top temperature is of vital importance because it indicates to us the approximate composition of the reflux, and the composition of the reflux depends on the composition of the overhead waste products.

It is standard practice to control the temperature of the reflux condenser so that only the reflux desired will be condensed. This control is generally obtained by the use of a float control on the reflux vapor separator controlling the amount of water to the reflux condenser.

The three pieces of equipment mentioned, i.e., column, reboiler and reflux condenser are the essential components of a rectifier installation and heat exchangers, preheater, cooler, controls, pumps, etc., are only accessories used to produce the desired conditions in the three essential pieces of equipment.

Operation

In general the operator has little or no control over the original design of the equipment which he operates but he does have control over the temperatures and pressures at which the equipment is actually operated. We will assume that

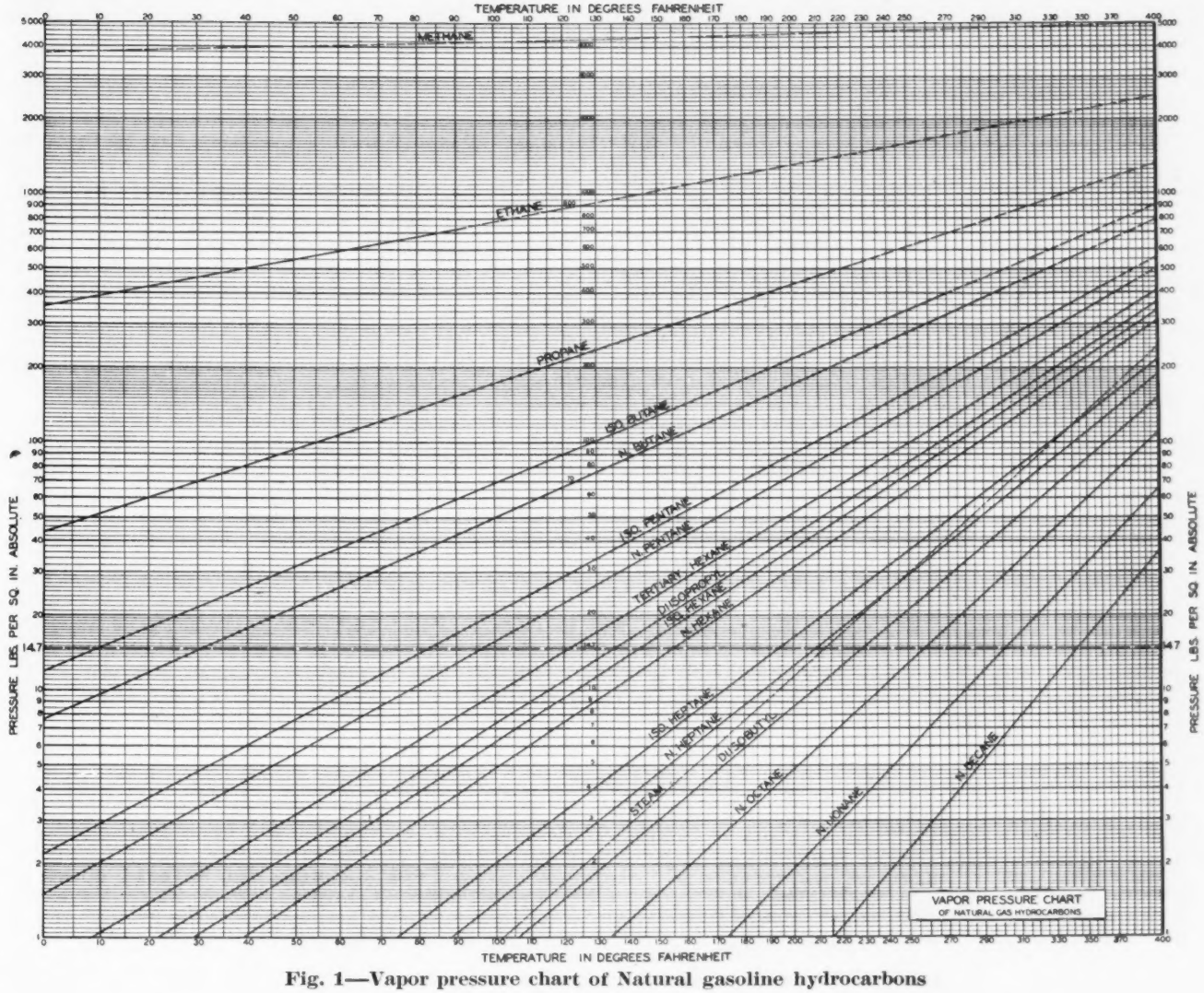


Fig. 1—Vapor pressure chart of Natural gasoline hydrocarbons

the unit is designed with a maximum working pressure sufficient to meet any need that may ordinarily arise. Most present day equipment is designed for working pressure of around 250 pounds which is more than is generally needed in a natural gasoline plant.

Minimum Operating Pressure

The lowest pressure at which a rectifier unit may be operated is controlled by several factors. We assume that we are making a predetermined cut and consequently that the overhead product and reflux has a definitely established composition. With a given temperature of condensing water, we cannot operate at a pressure below which the reflux will condense. The temperature of this cooling water is, of course, the limit to which we may cool the tops for condensation.

It is economically sound to approach only within a minimum of five or six degrees of the cooling water temperature, therefore, if we had cooling water of 75 degrees and plenty of condenser surface to cool the tops to 80 degrees the minimum pressure at which this unit may be operated and make the desired cut would be the minimum pressure at which we would condense this reflux at 80 degrees.

	Liq. Vol. Charge		Liq. Vol. Product	Liq. Vol. Residue		cu. ft./Cal.		Cu. ft. Residue	Vapor Vol. % Tops Mol. %	= V.P.@ 110°F. (From V.P. chart) pounds
Propane	5,150	—	0	5150	x	37	=	190,500	84.8	192
Butanes	9,850	—	8,750	1100	x	31	=	34,100	15.2	65
Pentanes	+16,250	=	16,250	0				0	0	
	31,250		25,000	6250				224,600	100.0	

Most rectifier units are not designed to make as close an approach as 5 degrees, consequently, the operating pressure cannot go much below 150 pounds for the kind of cut needed in a natural gasoline plant. To determine the lowest pressure at which a certain system will operate we will take an example.

Assuming feed consisting of:

Assuming a pressure of 100 pounds absolute on the condenser, the partial pressure exerted by the propane would be 84.8 pounds and the butanes 15.2 pounds. Then dividing the pressure assumed to be exerted by each component by the vapor pressure of that component at the temperature in question should give us the mol. fraction of each component. (Raoult's Law) in the liquid (Reflux).

$$\text{Propane} \quad \frac{84.8}{192} = .442$$

$$\text{Butanes} \quad \frac{15.2}{65} = \frac{.234}{.676}$$

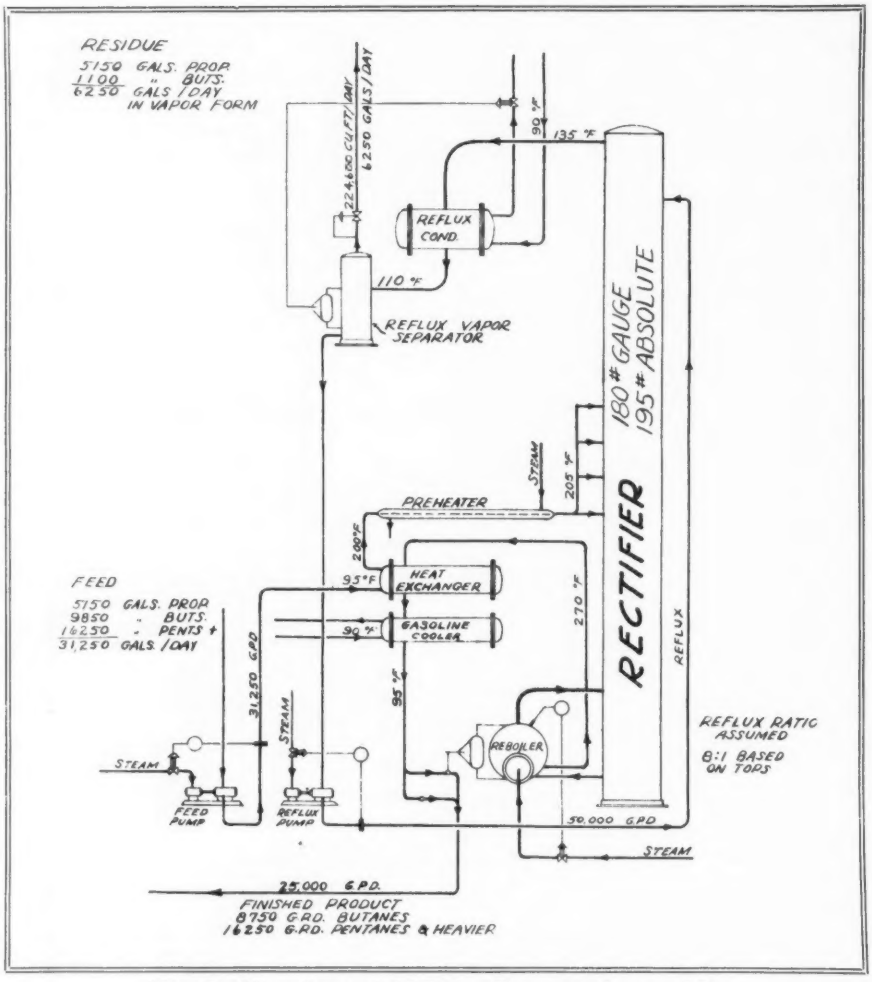


Fig. 2—Flowsheet of 25,000 gallons per day rectifier

Since the fractions thus obtained add up to equal less than 1, the pressure assumed was too low.

The minimum pressure would then be:

$$100 \times \frac{1}{.676} = 148 \text{ pounds absolute}$$

The Reflux Composition would then be:

			Mol. %
Propane	$\frac{.442}{.676}$	= .654	65.4
Butanes	$\frac{.234}{.676}$	= $\frac{.346}{1.000}$	34.6 / 100.0

148 pounds absolute or 148—15 = 133 pounds Gauge

133 pounds Gauge would be the absolute minimum operating pressure at which reflux could be condensed at 110°F. and it would not be advisable to go to so low a pressure for there would be no allowance for change in composition of feed. It is considered good practice to operate at least 10 per cent above this minimum pressure:

148 pounds Absolute
+ 15 10%

163
— 15

148 pounds Gauge operating pressure

Since we have already assumed an operating pressure of 180 pounds we know that it will be easy to condense reflux and that if the condenser has been designed generously we need not be limited in our choice of reflux ratio.

Another limiting factor to the low pressure at which a rectifier may be operated is the capacity of the column. If a unit is operating at the maximum capacity, it would not be advisable to lower the pressure even though reflux could be condensed since the tendency of the column to carry over would be increased.

IF THERE is an excess of butanes in the charge or feed to a rectifier over the amount needed to produce the desired product, the tops and consequently the reflux will contain a large amount of butane and therefore the unit can be operated at a much lower pressure, other conditions being the same, than if practically all the butanes were required in the product.

Maximum Operating Pressure

The maximum pressure at which a column can be operated besides being governed by the working pressure of the equipment is largely determined by the temperature obtainable in the reboiler. If the steam available is at comparatively high pressure, consequently high temperature, it is possible to operate a rectifier unit at much higher pressure than if the steam pressure is low.

The pressure at which a unit may be operated is dependent also on the relation between the reboiler heating surface and its load. The load, of course, is governed by the volume of charge, percentage overhead, and reflux ratio. It is not generally considered economically feasible to approach the steam temperature closer than 15 to 20 degrees. * * *

For this reason adequate surge tanks should be used between the absorption plant and the rectifying unit. The capacity of these tanks should be sufficient for several hours accumulation of the plant product, depending on the degree of fluctuation in the plant make. The average plant should have surge tank or "wild gasoline" storage capacity for at least eight hours production.

Another condition that is apt to influence the quality of the product is a change in the composition of the feed. There are a number of reasons why this composition might change, such as: a change in oil circulation, a change in the gas volume to the plant, a change in the still or absorber pressure, etc.

It should be assumed by the operators that when any great change takes place in the operation of the absorption plant that a change has been made in the composition of the rectifier charge and consequently the operation of the rectifier should be carefully watched when this changed product begins to enter the unit.

Let us assume that a rectifying unit is operating in conjunction with an absorption plant, and, for some reason, the operating conditions change, such as, the amount of water

to the gasoline condenser is reduced and less of the lighter ends are condensed. The product from the absorption plant would then be of much heavier composition than formerly and it might not contain enough butane to make the vapor pressure of the product equivalent to the column pressure at the reboiler temperature.

The rectifier kettle temperature would remain the same but the product from the rectifier would be entirely different and where, before this change in the operation of the absorption plant took place the product was meeting the desired specifications, it might not meet these specifications at all after the change.

Any such change as this would be evidenced by reduction in the top temperature of the rectifier column due to the scarcity of butanes at that point and an increase of the reboiler temperature should be made in order to make a propane free product. The composition of the rectifier feed is then seen to be a very important factor in the operation of a rectifier unit.

Of course, it is not feasible for the plant operators at all plants to have available methods for making fundamental analysis of the various compositions with which they deal. A very convenient method of interpreting the A. S. T. M. distillation in terms of actual composition is that worked out by G. G. Oberfell published in the *Oil & Gas Journal* of May 19, 1929.

The A. S. T. M. distillation has no definite connection with composition, nevertheless, for particular type of gasoline such as natural gasoline this method is satisfactory. This cannot, of course, be applied to determine the composition of the reflux, but can be applied satisfactory to determine the composition of the feed and final product. The top temperature of the column, coupled with operating pressure is a very good indication of the composition of the reflux.

Below is a tabulation based on a hypothetical case showing the composition produced by a rectifier operating properly and delivering a product of 25,000 gallons a day of gasoline, composed of 65 per cent pentanes and heavier and 35 per cent butanes, propane-free.

	Gal/day	Liquid Vol. %	Sp. Grav. @ 60°F.		Comp. Mol. %	V.P. @ 270	P.P.	V.P. @ 100°	P.P.
Butanes	8,750	35	.58	= .203	43.1	360 lb.	155 lb.	55 lb.	23.7
Pents	+16,250	65	.685	= .445	56.9	70 lb.	40 lb.	4 lb.	2.3
Total gas	25,000	100		.648	100.0		195		26.0 lb.
							— 15		
							180 pounds ga.		

A.P.I. = 87°

Assuming the same pressure and reboiler temperature but faulty operation due to some factor such as insufficient reflux, fluctuating rates, faulty controls, or shortage of butanes in the feed 1 per cent propane by liquid volume is retained. On the assumption that all the pentanes and heavier are still retained in the product with this one per cent propane added another tabulation is made showing the composition and characteristics of the product.

	Gal/day	Liquid Vol. %	Sp. Grav. @ 60°F.		Comp. Mol. %	V.P. @ 270	P.P.	V.P. @ 100°	P.P.
Propane	244	1.0	.515	.005	1.5	700 lb.	10	175 lb.	2.6
Butane	7,906	32.4	.580	.188	40.0	360	144	55	22.6
Pents	+16,250	66.6	.685	.456	58.5	70	41	4	2.4
Total gas	24,400	100.0		.649	100.0		195		27.0 lb.
							— 15		
							180 pounds ga.		

A.P.I. = 86.5°

In the first case the product would meet the AA specifications being well over 90 recovery and under 88 gravity and would also meet the new specifications for vapor pressure at 100 degrees. In the second case, the final quantity is reduced due to the small percentage of propane equaling in vapor pressure a larger percentage of butane.

The A. P. I. gravity is O.K. but the recovery would more than likely be below 90, for the 1½ mol. per cent propane would not condense in the A. S. T. M. distillation apparatus due to its boiling point being quite low (approximately 44 F.). In leaving the distillation apparatus, this propane would carry over a considerable quantity of the other fractions much more than offsetting any tendency to hold the propane in solution.

While the second product equals the first product in vapor pressure at the reboiler temperature (270°) its vapor pressure at 100° is higher, therefore it would not meet the new 26 per cent vapor pressure specifications. Assuming the difference in selling price of the two products as ¼c per gallon and disregarding the difference in losses in transfer, the gross revenue from the two products are tabulated as follows:

Correct operation	25,000 G.P.D.	@	4c/gal.	$1,000.00
Faulty operation	24,400 G.P.D.	@	3¾c/gal.	915.00
				$ 85.00 loss/day

Constant operating conditions throughout cannot be obtained without sufficient control instruments. No part of the control of the rectifier unit should be attempted by manual control as poor results are certain to follow. The minimum amount of automatic controls for efficient operation would consist of:

Reboiler temperature controller

A sensitive back pressure regulator

Feed flow controller

Reflux flow controller.

The system should also be equipped with a recording thermometer for the temperature at the top of the column.

Let us assume that a rectifying unit has been placed in operation and that sufficient reflux has been built up so that we are making as close a cut as possible but that we are doubtful if we are recovering all the available gasoline. Our product is meeting the gravity specifications for the grade which we are striving to make and the recovery in considerably over the required amount.

From appearances it would seem that we could include more butane in the product and still be within the specifications. Without an analysis of the feed we do not know whether or not that butane is available. Our top temperature has been constant, indicating that the qual-

ity of the feed has been constant.

An examination of the top temperature will be a fair indication of whether or not more butanes are available for the finished product. By referring to a vapor pressure chart we obtain the temperature at which the vapor pressure of propane is equivalent to the column pressure. If the top temperature of the column exceeds very greatly this temperature obtained from the chart, it is certain that fractions heavier than propane are passing overhead and that we may increase the production by retaining some of these fractions in the product.

This may be done by either increasing the operating pressure or decreasing the kettle temperature. In general, it is customary to operate with constant pressure and make temperature adjustments.

These adjustments should be made in very small degrees and results watched carefully. Only one adjustment in the entire system should be made at a time. This adjustment should be allowed to remain for an hour or so and the results checked carefully.

Treating Light Gasoline

By Hoke Martin*

(Presented before Natural Gasoline Plant Operators' Meeting, Thurber, Texas, March 31)

METHODS most generally employed in treating natural gasoline are the sodium plumbite or "doctor" method and with sodium or calcium hypochlorite known as the hypochlorite process.

Plumbite is used generally only on very sour and high sulfur content natural gasolines. It is more difficult to use although not necessarily more expensive than hypochlorite since it is possible to reclaim some of the spent solution. It sometimes gives a more stable product than hypochlorite unless the latter is carefully controlled.

On aviation gasoline where it is necessary to meet the government specification of a neutral residue in the distillation flask, plumbite is used when the chlorine demand is greater than one pound per 300 gallons of gasoline. It is possible to meet this specification with hypochlorite but close control is necessary.

Most plumbite treating plants for natural gasoline are continuous. A solution of sodium plumbite made by saturating a caustic soda solution of about 20 Be. concentration with litharge is contacted with the gasoline, a previous wash with caustic soda having been given if any hydrogen sulfide is present in the distillate.

Often there is sufficient elementary sulfur content to cause a natural break. If not, part of the gasoline is by-passed through a tower filled with sulfur where it is picked up sufficiently for the break. The sodium plumbite reacts with the mercaptans to form lead mercaptides and elementary sulfur reacts with the latter to form lead sulfide, which is precipitated and disulfides. The disulfides have a sweet odor and of course are negative to the "doctor" test. The gasoline passes on through settling tanks where the lead sulfide and plumbite solution settle out. The plumbite is recirculated until spent.

The spent solution consists mainly of lead sulfide and caustic solution. It is drawn into a tank and is there blown with air and steam with the result that a certain amount of the lead sulfide is converted into lead sulfate or lead thiosulfate, according to different authorities, and is redissolved in the caustic again forming sodium plumbite.

After several hours agitation some additional litharge and caustic may be added to bring up to the required strength. There are some very conflicting reports as to the success of reclaiming in this way and I am not in a position to state just what percentage of lead sulfide may be put again into solution.

The Fielschmidt-Cantrell Process which separates the lead sulfide or blackstrap from the caustic solution and reclaims it by treating with chlorine, hypochlorous acid or sodium or calcium hypochlorite has not met with a great deal of success. It was first thought that chlorine oxidized the lead sulfide almost completely to lead oxide or litharge and elementary sulfur but some recent work has shown that the greater percentage is converted into lead sulfate. This has reacted against it for the amount of caustic necessary to put $PbSO_4$ into solution is double the amount necessary for PbO.

By far the greater quantity of natural gasoline treated is with the Hypochlorite process or with sodium or calcium hypochlorite. We estimate that 80 per cent of the natural gasoline treated in the field is with hypochlorite. A calcium hypochlorite solution is available from either bleaching powder or by passing chlorine into a milk of lime solution. Another source of calcium hypochlorite is a new product manufactured by the Mathieson Alkali Works (Inc.) with the trade name H T H (High Test Hypochlorite). We will have more to say about it presently.

Sodium hypochlorite is made by passing liquid chlorine into a caustic soda solution. The requirements are about 1.2 pounds or over of caustic soda per pound of chlorine. The final temperature of the solution should not go over 95 F. as a higher temperature will cause the sodium hypochlorite to break down into sodium chloride and sodium

*Mathieson Alkali Works, Inc.

chlorate. There is a rise in temperature of 0.6 F. per gram per liter of chlorine absorbed.

A solution containing 30 grams per liter of available chlorine (4 ozs. per gallon) can usually be safely made without going over the maximum temperature of 95 F.

This solution could be made up as follows: Take 250 gallons of 13 degree Be. caustic soda in the chlorinating tank and dilute with 350 gallons of cold water, dilution being put off until now simply as a means of getting a lower temperature of the solution before chlorinating. 150 pounds of chlorine are now run into the solution. This is diluted.

Hypochlorite offers no particular difficulties on natural gasolines of low sulfur content and requiring less than 2 pounds of chlorine per 1000 gallons treated. If the gasoline has no hydrogen sulfide content satisfactory treating is often carried out by simply bubbling through a tower filled with sodium or calcium hypochlorite. Baffling or filling the tower with tile or sulfur free coke improves the contact.

If the demand is greater than one pound of chlorine per 1000 gallons then a better contact such as orifice, lever, or jet mixers are necessary. Better and more economical treating can be carried out by using a very dilute solution. To insure a uniform solution of low concentration, a treating plant that allows a very small quantity of fresh solution to be added continuously during recycling has found favor with a number of companies in the Mid-Continent field.

Hydrogen sulfide is usually associated with those natural gasolines having a high mercaptan content. To successfully use the hypochlorite process all hydrogen sulfide must be removed before contacting with hypochlorite. This is done by scrubbing with a caustic soda solution. If it is not all removed, hypochlorite oxidizes it to water and free sulfur, the latter remaining in the gasoline and resulting in a corrosive product.

Once this happens, the only economical manner of removal is by blending with sour gasoline and plumbite treating.

On treating natural gasolines having a chlorine demand of more than one pound per 250 to 300 gallons, it is economical to give additional caustic washes after the hydrogen sulfide has been removed. It has long been known that mercaptans are similar to alcohols and phenols in their behavior to alkalis. The reaction is expressed by RSH plus NaOH yields RSNa plus HOH. The reaction is reversible and by repeated caustic washes the mercaptans can be removed to a low degree but never completely.

Left to right: W. J. Van Bibber, W. O. (Scotty) Mullin and Tom Yonker, all of Lone Star Gasoline Co. and J. M. Holloway, Hanlon Gasoline Co.

Paul Coffin, Lone Star Gasoline Co.

This type plant usually employs a series of towers all filled with caustic, the gasoline passing through them in succession. Contact usually is secured by means of a jet mixer. If there is hydrogen sulfide, all of it will be removed in the first tower and the first tower will spend itself before the others. When this happens the caustic is dumped from the first tower and the solutions are backed up, the fresh solution going in the last tower.

Mr. Ritchie of the Signal Gasoline Co., Rita Santa, Tex. has done some experimental work on the optimum concentration and temperatures best suited for mercaptan removal and has gotten some very interesting results. In some plants multiple caustic washing has cut the chlorine consumption as much as 50 per cent. The ideal plant for caustic washing is a continuous flow of caustic soda counter-current to the gasoline flow.

Although on low mercaptan content gasolines there is little or no danger in the use of excess chlorine or of hypochlorite solutions of high concentration, it is a very important consideration on those of higher mercaptan content. Most of our difficulties with hypochlorite are the result of action on sulfur compounds or unsaturants subsequent to the oxidation of the mercaptans to disulfides and water.

It is the so-called chlorhydrins which give us difficulty with odor and color stability following hypochlorite treating. Their formation can be minimized by the use of a very dilute solution of hypochlorite, not to exceed 5 grams per liter of available chlorine, and have at least 3 grams per liter of free caustic. Care should be exercised to use only enough of the hypochlorite solution to sweeten. The ideal way to use hypochlorite is to regulate the flow so as to spend the available chlorine content in one cycle.

The use of 3 to 5 grams per liter of free alkali in a dilute solution of hypochlorite would result in an excessive caustic consumption unless the spent solution was used for diluting the

stronger freshly prepared solution. This can be easily done as little or none of the free alkali in the hypochlorite is expended during treating.

Chlorhydrins or in more common terms, excess chlorine, can be removed by following the hypochlorite with a strong caustic soda wash, according to some authorities. This, however, requires long and intimate contact and does not fit in with the instantaneous sweetening afforded by hypochlorite and so the best way to remove them is to prevent their formation in the beginning.

Generally speaking the better way for treating a high mercaptan sulfur content natural gasoline is to employ multiple caustic soda washes for the removal of hydrogen sulfide wholly and the mercaptans partly; followed by a dilute hypochlorite solution and the use of only enough for sweetening. Then a caustic soda wash of strong concentration with long and intimate contact can do no harm. Shorter still as much caustic as possible and as little hypochlorite as possible.

Treating as above results in the removal of very little sulfur aside from that contained in the hydrogen sulfide. A few of the lower disulfides, products of the oxidation of the mercaptans, are soluble in water and consequently are removed. Also the thiophene content of American gasolines is usually relatively high and hypochlorite does not react with them in any manner.

In planning a hypochlorite treating plant, the question often arises as to the use of bleaching powder, chloride of lime, or chlorine and caustic soda as the source of the hypochlorite treating solution. It is preferable to use chlorine and caustic where the consumption will be as much as 25 pounds of chlorine daily or of lesser amount when it is necessary to use caustic for the removal of hydrogen sulfide.

The latter will make it necessary to handle caustic regardless, rendering the only advantage of bleaching powder over chlorine void. Chlorine is much easier to handle—there is no sludge problem which is most generally felt in disposition, clogging of lines, contactors, treaters, etc. Bleaching powder is a very unstable product while there is no deterioration of either caustic or chlorine during storage.

It is at this point that I would like to speak of the new product H T H (high test hypochlorite). The product is relatively new in the petroleum industry, as it has only been a short time since it has been available at a cost that would justify its consideration.

Bleaching powder is made by saturating hydrated lime with chlorine gas. Its formula is usually given as $CaOCl_2$, calcium oxychloride. It is really a combination of calcium hypochlorite and calcium chloride which breaks down into such upon going into solution. There is also present about 13 per cent of free calcium hydroxide and 5 per cent of insoluble matter mainly calcium carbonate. The material is very hygroscopic and decomposes rapidly in the presence of moisture and heat.

The available chlorine content of a high grade chlorinated lime is 35 to 37 per cent upon leaving the factory but among small users the yield of chlorine is often very much less.

H T H has an available chlorine content of 65 per cent. It is made by a wet process by chlorinating a milk of lime solution and evaporation in vacuum dryers. It is a true solid calcium hypochlorite and is stable under any ordinary conditions of storage. It may be kept for a year or more without any decomposition.

The calcium chloride has been converted into sodium chloride so that the material is not hygroscopis. It has only 4 per cent of insoluble matter compared with bleaching powder's 18 per cent and taking into consideration the available chlorine yield, the amount of sludge would be only 8 per cent of that of bleaching powder. In fact it is possible to use the solution diluted to the extent that practically all of the free calcium hydroxide, which we classify as insoluble matter if used in higher concentrations, goes into solution.

One plant in the Seminole field that was using bleaching powder found it necessary to clean the sludge out every week —upon changing to H T H, no cleaning has been necessary since going to it last October. H T H readily goes into solution which is not the case with bleaching powder. Often the pumping of undissolved particles of bleaching powder results in excessive corrosion to the pump and treaters—this trouble is not experienced with H T H. It is necessary to handle only 40 per cent or less of material and its use results in cleaner and more satisfactory treating.

It is a great favorite with the treating plant operators as all of the objectionable features of handling are eliminated.

It might be in order here to mention a new process for treating refinery products that might spread to natural gasoline. It is the cupric chloride method patented and developed by the research department of the Phillips Petroleum Co. The company has almost completed a plant to use this method at its Borger refinery but does not contemplate extending it to natural gasoline plants at present. Upon contacting the gasoline with cupric chloride the mercaptans are oxidized to disulphides and muriatic acid. Cupric chloride is reformed from the cuprous chloride and muriatic acid by bubbling air through it.

On account of the presence of the muratic acid it is necessary to build the entire treating plant with wood. The action takes place rapidly and the treating is continuous. The cupric chloride treatment takes place within a very narrow range of concentration and we understand that the process is fully protected by patent.

Hilton New President Of S. O., Louisiana

HOUSTON, April 3.—J. C. Hilton, formerly purchasing agent of the Standard Oil Co. of New Jersey, will succeed Dan R. Weller as president of the Standard Oil Co. of Louisiana, a 100 per cent subsidiary of the New Jersey corporation. Mr. Weller is resigning because of his health, but will continue connection with the Louisiana Standard as chairman of its board of directors.

Mr. Weller, a Standard oil employe and executive for 38 years, was in charge of United States Navy fuel oil requirements in the world war.

Synthetic Lubricants and Motor Fuels Made by Petroleum Chemists

By Arch L. Foster

N. P. N. STAFF WRITER

INDIANAPOLIS, April 2 MOTOR lubricants of very high viscosity-temperature coefficient, low carbon residue and low pour point, are being made by the polymerization of olefinic hydrocarbons with aluminum chloride.

Their manufacture was explained to chemists of the Petroleum Division of the American Chemical Society April 1, by technologists of the Standard Oil Co. of Indiana.

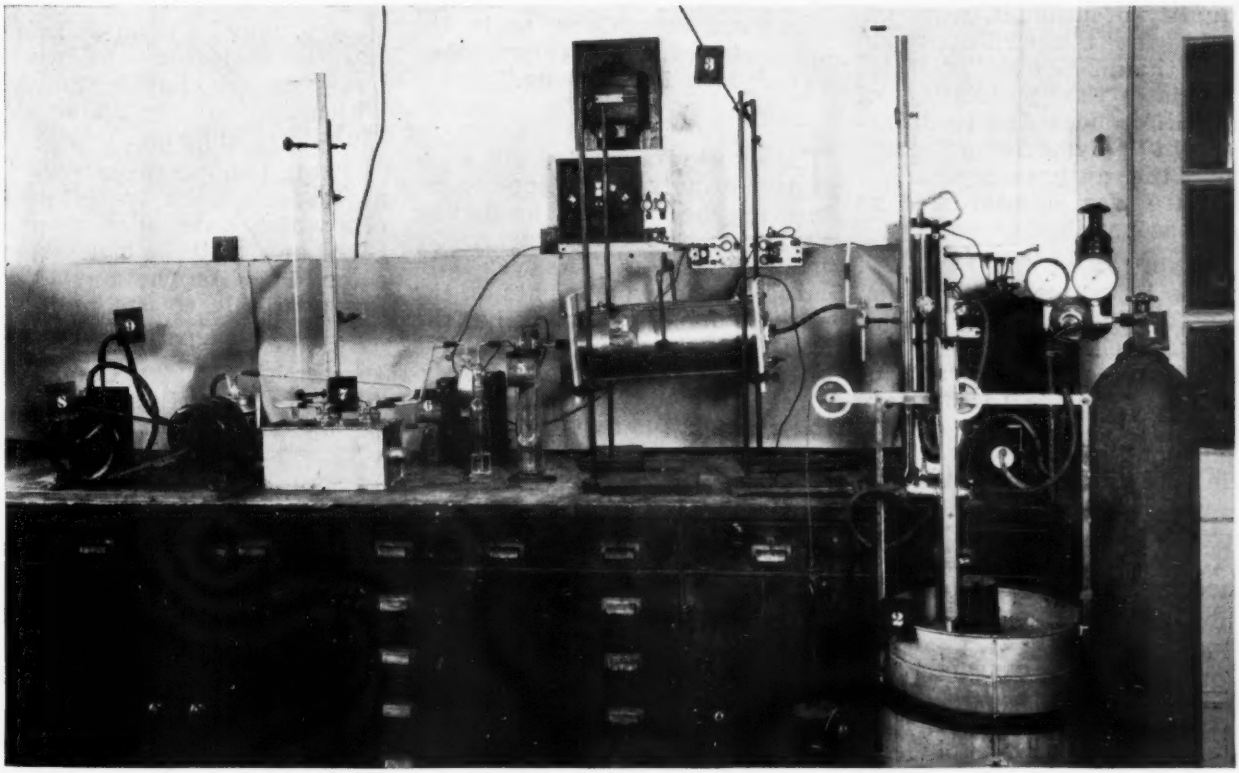
These lubricants are being manufactured and tested for various purposes in motor cars by this company. Some of the results show exceptionally valuable improvements over natural lubricants for some uses, it is said.

The manufacture of benzene, C_6H_6, for motor fuel, from natural gas by pyrolysis or "cracking" of gas without catalysts, under carefully controlled conditions, with good yields on a "once through" basis, has been carried out by H. M. Smith and the Bureau of Mines laboratory, and preparations are now under way for the construction of a large scale apparatus to continue the research on a much larger scale.

Preliminary figures place the benzene yield at 0.3 gallon per 1000 cubic feet of methane gas, with less than one-third of the methane consumed. The presence of ethane and higher hydrocarbons such as are found in natural gas increases the yield markedly.

Actual photographs of the explosion wave in the cylinder of an automotive engine under detonating and non-detonating conditions have been made by Lloyd Withrow and T. A. Boyd of the General Motors Research Corp., which explain in great measure the action which takes place when detonation occurs.

Production of commercial asphalt from cracking still resi-



Small scale apparatus used by the Bureau of Mines for the pyrolysis of natural gas to form higher hydrocarbons. (1) Cylinder containing methane under pressure (2) Gasometer (3) Thermocouple leads (4) Molybdenum wound furnace (5) Electrical tar precipitator (6) 10,000-volt transformer (7) Light oil absorption bottles (8) Glycerine sealed transfer pump (9) Exit gas delivery line to gasometer. It is understood that a large scale plant is being built at the Bureau of Mines Laboratory at Bartlesville, Okla.

dues, with suitable properties of penetration, ductility, melting point and solubilities has been carried out by Gustav Egloff and J. C. Morrell, the product being made from Mid-Continent crudes from which at present asphalt is not made in commercial quantities.

Polymerized Olefins as Lubricants

Synthetic lubricants were prepared by polymerizing unsaturated distillates from the cracking of paraffin wax, and from practically pure ethylene, butene —1 and —2, pentenes, trimethyl ethylene, cetene (from spermaceti or cetyl alcohol), and a large number of other olefins, it was reported in the paper by F. W. Sullivan, V. Voorhees, A. W. Neeley and R. V. Shankland of the Standard of Indiana. Cracked distillates were made by cracking paraffin waxes with varying amounts of oil in them.

In earlier work, Brownlee, in polymerizing cracked distillates from Pennsylvania gas oil, used two per cent by weight of aluminum chloride, and temperatures up to 400 F. Mr. Sullivan and his collaborators found that better yields, especially as to quality of product, were obtainable at temperatures not higher than 200 F. "In order to obviate the possibility of small differences due to differences in polymerizing conditions," the authors stated, "a procedure was standardized as closely as possible.

"A solution of 420 grams of amylene in 3 liters of naphtha, rendered inert by previous aluminum chloride treatment, was agitated with 75 grams of aluminum chloride for 8 hours at 57.2° C. At the end of this time the product was allowed to settle, sludge was separated and the supernatant solution of oil, after washing successively with NaOH solution and water, was reduced with fire and steam to the desired viscosity.

"The oil obtained by hydrolysis of the aluminum chloride sludge was of inferior quality in all respects. This fact is confirmed by the results of Stanley; Nash, Stanley and Bowen who found that as the temperature of polymerization of ethlene with aluminum chloride was increased the yield and quality of 'combined' oil diminished.

"All the olefins were polymerized in naphtha solution except cetene which was agitated with aluminum chloride at 57.2° C. in the absence of any diluent. Most of the olefins were made by the dehydration of the corresponding alcohol over Al_2O_3. Cetene was made by the thermal decomposition of spermaceti or cetyl alcohol. The results of these experiments are given in Table I.

"In general, it appears from this table that in the case of normal olefins, with increasing molecular weight of the raw material, the temperature coefficient of viscosity decreases. Although the polymerized oil from cetene had a lower temperature coefficient of viscosity than any of the other synthetic oils, it had a higher cold test. Investigation showed that this high cold test was not due to the presence of a small amount of high melting wax, but rather to the presence of a relatively large amount of low melting wax.

"In the case of isomeric olefins the change of viscosity with temperature increases with the degree of branching of the starting material. This cannot be expressed quantitatively and there are exceptions, as in the case of normal butylene compared with isobutylene."

THE authors carried out a series of polymerizations to determine the effect of the boiling range on the temperature-viscosity coefficient. As was indicated by the experiments on the pure olefins, they found that the longer the straight chain of the unsaturated distillate ploymerized, the lower the coefficient of the resulting heavy oil.

Most of the unsaturated distillate was approximately 90 per cent unsaturated. It was found, according to the authors, that the degree of unsaturation affected the yield of viscous oil considerably. For instance, a 60 per cent unsaturated oil gave a yield of about 20 per cent of oil of a viscosity of 200 Saybolt at 210 F., while a 90 per cent unsaturated distillate yielded 35 per cent of 200 viscosity oil.

Another point of interest in the results obtained is the fact that the polymerization of a mixture of unsaturated oils gave a viscous oil of the same characteristics on viscosity, etc., as did a blend of the ploymerization products of the two original components of the mixture, polymerized separately.

To illustrate, the oil resulting from the polymerization of a mixture of propylene and cracked paraffin wax showed the same loss in viscosity between 100 F. and 210 F. as did a proportionate blend of the products from the two components which were polymerized separately and then blended in calculated percentages.

The proportion of aluminum chloride employed for best results was found to be three per cent. If the reaction is carried out until all unsaturates are polymerized, the viscous oil yield is higher the lower the temperature of reaction.

These experiments were carried out first in a six-liter cylindrical, vertical autoclave equipped with stirrers and pressure gauge. Later four-gallon steel cylinders heated internally by steam and mounted on trunnions, and small-plant scale work was carried in two-barrel jacketed kettles fitted for centrifugal circulation. A large number of different catalysts were studied, silicon and titanium tetrachlorides, as well as heavy metal chorides, none of which showed the efficiency of aluminum chloride.

Table 1 shows the conventional inspection of two synthetic oils which have been manufactured in quantities large enough to be placed on the market, and are available to the public.

TABLE 1

Properties of Two Commercial Synthetic Lubricants

Gravity, °API	30.6	29.7
Flash	515°F (268°C)	615°F (324°C)
Pour	-20°F (-28.9°C)	0°F (-17.8°C)
Viscosity:		
Say. Univ. at 100°F (37.8°C)	850	3250
Say. Univ. at 210° (98.9°C)	85	197
Color, N.P.A.	2	2½
Conradson Carbon, %	.13	.4
Slight Oxidation, Mg. Sludge/10 gms. of oil	1.8	2.8

The lubricants showing the best properties for use proved, as might be expected, to be those made from cracked paraffin wax. This is ascribed to the fact that such cracked material contains longer straight chains than those from any

ACCURACY

. . . . in every curb pump accuracy is imperative.

If this accuracy is insured the foot valve must be tight.

Morrison Foot Valves made in a large variety of styles have earned an enviable reputation for enduring tightness.

FIG. 158

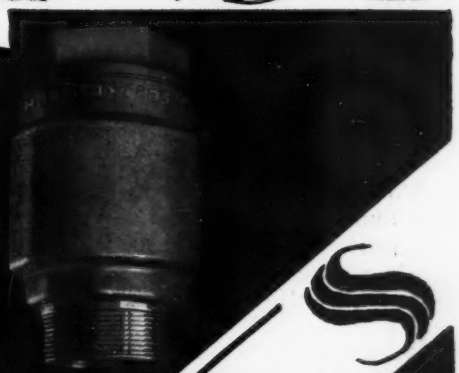
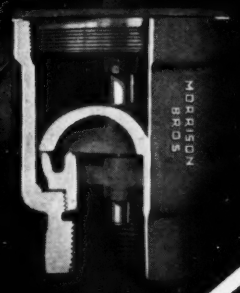


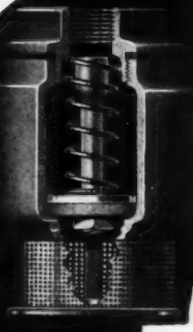
FIG. 338

FIG. 339

Patent applied for



FOOT VALVES



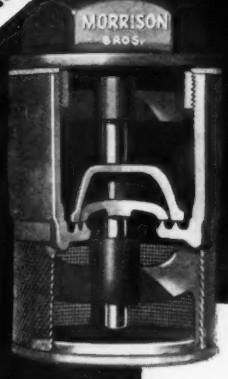


FIG. 136

Morrison Foot Valves are made in two distinct types, the composition seat and the metal to metal seat.

This affords the buyer his choice of two well established methods of valve seating.

FIG. 335

Patent applied for

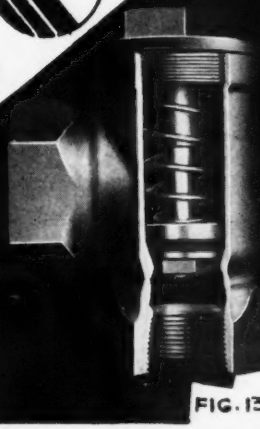


FIG. 137

Accuracy and close precision in the manufacture of these valves insure their absolute tightness.

Please write for booklet showing full line of foot valves and angle check valves.

MORRISON BROS
DUBUQUE, IOWA.

other source. The oils polymerized from cyclohexene and from pinene (the latter fractionated from turpentine oil) resemble closely natural oils of so-called naphthenic origin in low A.P.I. gravity and low temperature coefficient of viscosity. From this the authors deduce that the natural naphthenic oils are polynaphthenes with most of the carbon atoms in, or attached directly to, the rings.

To determine the behavior of the synthetic oils in service, in comparison with natural lubricants refined for the same purposes, a synthetic oil and a typical black oil, each of 157 seconds viscosity at 210 F., were tested in a standard steering gear. At 0 F. the synthetic oil required a torque of one-half pound at the circumference of a 17-inch wheel, the black requiring five pounds. At minus 20 F., the torque for the synthetic and black oils respectively were 1.2 and 120 pounds.

In a standard transmission, the torque for shifting was 3 pounds for synthetic oils, and 15-20 pounds for a commercial transmission lubricant of like viscosity at standard temperature. Fifty hours of service in a well known make of motor increased the color of synthetic oil from 5.6 to 101 true color units; a Mid-Continent lubricating oil of the same viscosity showed an increase of from 163 to 762 units on the true color scale.

The authors state that a large amount of data has been obtained on combustion engine tests with the new oils, and a report of these results will be made later.

Photographing Combustion

Synchronizing a fast camera lens with the explosion period of a single cylinder gasoline engine, Lloyd Withrow and T. A. Boyd of the General Motors laboratory were able to obtain actual photographs of the passage of the explosion wave across the cylinder head.

A special cylinder head was equipped with a long narrow window, five inches by $\frac{3}{8}$-inch, the material being quartz. One end of the window was placed immediately above the terminals of the spark plug, and the window stretched directly across the cylinder. The relative fragility of the material, quartz, as compared to metal prevented the use of heavily detonating fuels, but the experimenters were able to obtain enough knock to demonstrate its action thoroughly.

The camera was placed immediately above the cylinder head, vertically downward, and a funnel shaped hood connected to the cylinder top. An f. 1.5 lens and Eastman portrait panchromatic cut film were used. Pressure records were obtained of the pressure developed within the cylinder during the explosion photographed.

The film was placed on a rapidly revolving drum, before which was placed a specially designed shutter. Both drum and shutter were operated indirectly by the engine mechanism, and synchronized with it so as to expose only one explosion to the film when the operation had reached the desired conditions.

THE photographic records show that, when no detonation occurs during the explosion, the rate of flame travel from the spark plug toward the opposite side of the head is fairly regular, progressing on a relatively even front over the path. The pressure curves show also that no irregular increases in pressure occur, the curve being smooth and without sharp breaks.

When detonating conditions are introduced, the flame travels for the greater part of its path in essentially the same manner as in the absence of detonation. In either case there appears to be slight interval after the spark before the flame starts to travel away from the terminals, the time being equivalent to about five degrees of crankshaft rotation.

When detonation is occurring, the flame reaches a point about four-fifths of the distance from the plug to the opposite side of the head without appreciable distortion of the curve. For the next half-inch the speed appears to decrease appreciably, after which the remaining distance to the far side of the head is traveled at detonating speeds, approaching the infinite in rate.

The rate of flame travel before detonation is about 80 feet per second. Indications are that auto-ignition took place, in some cases at least, near the end wall of the combustion chamber just as the detonation wave begins, this wave spreading backward toward the spark plug to meet the oncoming combustion wave.

Three Forms of Paraffin Wax

Three distinct forms of paraffin wax are found in petroleum, according to the results of many investigators; L. M. Henderson of the Atlantic Refining Co. and his collaborators reported some original results tending to show the conditions under which the different types predominate, and the influence on each of the presence of the others, varying concentrations, and other variables.

The types referred to by these authors are plate, needle, and an indefinite form termed by them as mal-crystalline. The conclusions reached by the authors are stated best in their own terms:

"1. Petroleum waxes, instead of being composed solely, or even predominantly, of normal paraffin hydrocarbons, contain several series which are homologous at least with respect to physical properties and crystal form.

"2. The members of a given series show marked similarity in crystal form.

"3. The broad types of crystal form may be given as (1) plate, (2) needle, and (3) mal-crystalline; the last named group being characterized by lack of any definite recognizable form.

"4. The general crystal form (plate or needle) of a given pure wax is an inherent property of the compound, and is dependent of factors such as viscosity of the solvent. Marked changes in the chemical character of the solvent may change details of the *shape* of the plate, but do not destroy the general plate characteristics.

"5. Both needle and mal-crystalline waxes have marked powers of impressing their form upon plate waxes, the latter apparently being the most powerful. Neither mal-crystalline nor needle waxes, however, are capable of affecting the form of plate waxes unless the solubility relationships are such that the needle or mal-crystalline waxes may separate from solution simultaneously with the plates."

East Texans to Enjoin Prorating Allowance of 90,000 Bbls.

By Paul Wagner

N. P. N. STAFF WRITER

HOUSTON, April 4

PRORATING of East Texas crude oil production at 90,000 barrels daily, ordered for April 10 by the state railroad commission, will be contested in the courts by anti-prorationists.

They announced dissatisfaction with that figure and the commission's step-up schedule that would bring the Sabine Uplift region in Gregg, Rusk, Smith and Upshur counties to 130,000 barrels daily production, attainable July 1.

Sabine Uplift region production had reached to 175,000 barrels daily, April 3, with 135 wells completed; 15 of that number were shut in for lack of crude outlet. Additional operations totaled 296, including active locations and rigs, of which 198 were actually drilling.

Former Governor Dan M. Moody, counsel for the East Texas Lease, Royalty & Producers Association, of which Carl Estes of Tyler is the leading anti-prorationist spirit, has until Friday, April 10 to file briefs seeking restraining order. It was indicated such an order would be sought in Travis county district court at Austin.

East Texas figures in the general order bring state totals to approximately 691,000 barrels after April 10, with periodic step-ups that call for a maximum exceeding 740,000 barrels, July 1. The state total compares with 644,253 barrels in the preceding prorating period, when the Sabine Uplift region was under no restriction whatsoever.

In the new general order, three districts were reduced approximately 61,000 barrels daily to make way for part of the East Texas allotment. Reductions included fixing of West Texas production at 213,431 barrels, or reduction from recent allowable of 245,927 barrels; southwest Texas, reduction from 77,447 to 63,000 barrels; and Gulf Coastal Texas, from 155,000 to 140,000 barrels. Yates field, in West Texas, was reduced from 89,500 barrels to 70,000 barrels and other cuts placed elsewhere in the Permian Salt Basin region.

Recommendations of its Central Proration Committee were adopted by the commission with regard to the Gulf Coast and southwest Texas, but it went the advisory group one better in cutting West Texas below the 232,931 barrels suggested. The Panhandle district, recently prorated at 35,000 barrels daily and recommended for a similar future maximum, was given 37,000 barrels in the new order.

Wichita Falls district, slated for readjustment, had allowance of 58,144 barrels in the preceding prorating period and was recommended for 59,630 barrels in the new order. It is proposed to raise the allowable there to 63,000 barrels in 30 days. Similarly, the general Ranger territory had allowable of 25,000 barrels and was recommended for 23,447 barrels. It, too, is to be increased within 30 days, probably to 33,500 barrels.

VAN field, in central East Texas, now operating under 40,000 barrels daily outlet, steps up automatically 5000 barrels daily in May and June monthly periods until 50,000 barrels allowable is reached, under an old agreement with the commission and the Central Proration Committee. The central East Texas district, including Van, has April allowable of 52,050 barrels, compared with 38,735 barrels at the beginning of the old order, and adjusted thereafter.

In fixing its Sabine Uplift region step-up, the commission allocated to that district 90,000 barrels daily from April 10-30; 98,500 barrels, May 1-15; 106,500 barrels, May 16-31; 118,000 barrels, June 1-15; and 130,000 barrels, June 16-30.

DIVIDED among the three areas of the Sabine Uplift district, the Joiner area steps up from 40,000 barrels, progressively to 42,000, 44,000, 48,000 and 52,000 barrels; Kilgore area, 35,000, 37,500, 40,000, 44,000 and 48,000 barrels; Lathrop or Longview area, 15,000, 19,000, 22,500, 26,000 and 30,000 barrels.

Adjusted to such step-ups and the automatic increases mentioned for Van, the state allowable in Texas will exceed 740,000 barrels daily, July 1, assuming successful application of commission orders for the Sabine Uplift region.

The general order applies for a six months period, but the Sabine Uplift region of East Texas is covered only by a 90-day order, which means this territory will come up for further consideration ahead of other producing areas.

In issuing its new schedules six days after conclusion of Austin proration hearings, and four days after its preceding general order had expired, the commission announced it will insist on appointing umpires in the several fields and having them paid by the state. Previously the operating companies had themselves paid umpires, but the

commission's approval was required in "hiring and firing."

Chairman C. V. Terrell announced the governor would be asked at once for appropriations to provide for state pay of umpires and also an engineer to be attached to the commission staff to collect data on which proration is based.

Work of this character has been handled in the past through the Central Proration Committee, of which Robert R. Penn of Dallas is chairman and David Donoghue of Fort Worth is technical advisor. The Central Proration Committtee is composed of two representatives of the crude oil purchasing agencies, two representatives of the Texas division, Mid-Continent Oil & Gas Association, and two representatives of the Independent Petroleum Association of Texas, besides Mr. Penn.

The commission's announced stand amounts to its knuckling to certain demands of anti-prorationists Moody and Estes, who had maintained they "will not accept dictation from the Central Proration Committee," but who apparently see no injustice in dictating on their own account.

When Governor Sterling gets the commission's recommendation for state funds to carry on with proration he may be expected to have something more to say about the administration bill now in the legislature designed to create a new conservation commission and divest the railroad commission of its present handling of natural resource affairs.

Former Governor Pat M. Neff, who has been at political odds with other commission members, did not sign either the East Texas or the general prorating order. He announced he would issue a statement later. At the same time he called attention to the fact he had not signed a prorating order since last October.

In a recent statement issued after Governor Sterling's announcement of the administration measure to create a new conservation board, Neff attacked policies of his colleagues on the commission. They, in turn, took cognizance of his attacks and some interchange of personalities resulted.

Extension of Sabine Uplift Area To Harrison County Foreseen

HOUSTON, April 4

POSSIBLE extension 12 miles northeasterly of the Sabine uplift producing district, in East Texas, was forecast by the coring of oil sand in the Sinclair Oil & Gas Co.'s Harrison county test on the Mrs. Cora L. Davenport land.

The Sinclair test, 18 miles west of Marshall, in the John V. Morton survey, had five feet of slightly saturated oil sand at 3693-3698 feet, before drilling 14 feet of shale and 16 feet of lime to 3728 feet.

Whether the test makes a well or not the show found will have bearing on future wildcatting on the 2000-acre Sinclair block and other leaseholds in western Harrison county. Surface elevation of the test is 396 feet above sea level.

Commercial production in the Harrison county area would give the general district a length of more than 40 miles, extending northerly from the Junior and Kilgore areas of northwestern Rusk county past the Lathrop area in Gregg county; the productive width of the district has been proved for five miles in the Joiner area, westerly into Smith county, and nearly seven miles from the Lathrop discovery well to the Selby Oil & Gas Co.'s No. 1 Snavely, one mile south of Gladewater, in western Gregg county.

The previously reported Snavely test[1] had not been finally completed when this was written, but was regarded as certainly a commercial well. It had a second oil sand at 3582-3585 feet, after first coring seven feet of saturated pay at 3529-3536 feet, and has been standing with 7-inch casing set.

Two big wells in the Kilgore area are the No. 2 Laird of Stanolind Oil & Gas Co., and Crosby, Isaac Ruddle survey, which flowed 290 barrels in 10 minutes at 3655 feet; and H. W. Elliott's No. 1 Andrews, William F. Hyde survey, three miles north of Bateman-Crim production on the Humble Oil & Refining Co.'s block.

The Elliott well blew out through casing, but after its control flowed 450 barrels in the first one hour and 20 minutes, through one and one-half inch choker. In three hours it flowed 1182 barrels on various size chokers.

It is considered a connecting link between the Kilgore and Lathrop areas, indicating possibly continuous production along the Comanchean Cretaceous shoreline that flanks the regional uplift.

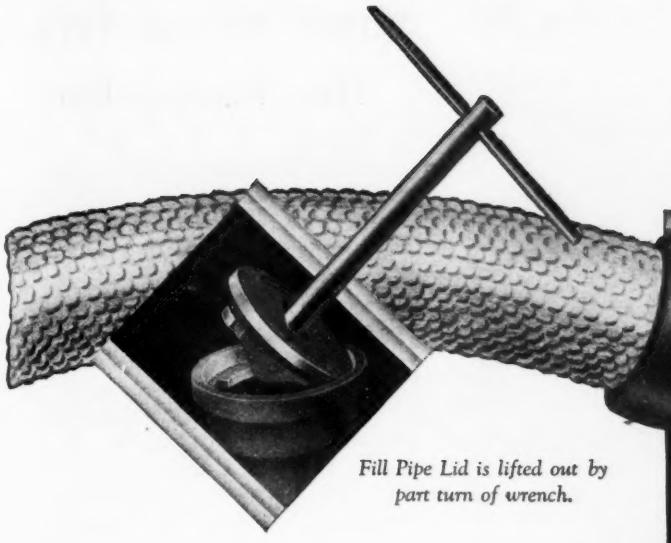
Additional big wells come in daily in the general district, adding to the list of owners such major operators as Magnolia Petroleum Co., Shell Oil Corp., Stanolind Oil & Gas Co., Tidal Oil Co., and other substantial interests not hitherto in the producing column.

From now on such substantial interests as Gulf Production Co., Selby Oil & Gas Co., and others, will be added to the list, which has included Humble Oil & Refining Co., and Arkansas Fuel Oil Co., for weeks or months.

Smaller operators and one-well owners continue to complete wells, principally in the south end or Joiner area, 30 miles south of Lathrop development and nine miles south of the Bateman-Crim discovery, near Kilgore.

Altogether the district accounts for 296 operations ranging from active locations to rigs and test drillings; 196 are in the latter classification. A high mark of past production was

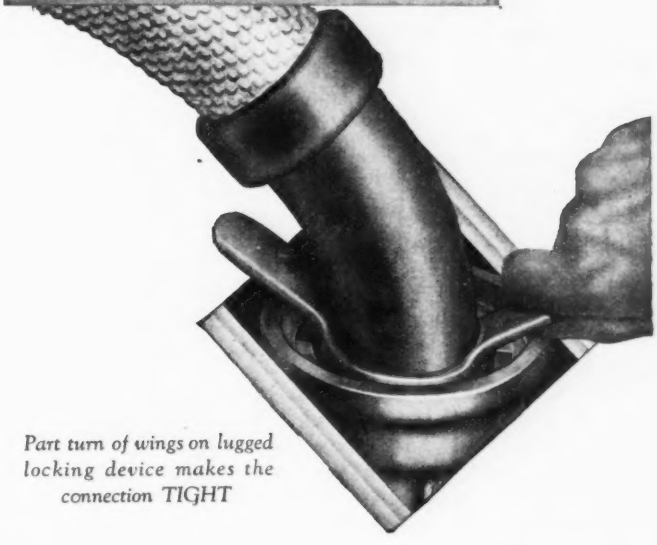
[1] National Petroleum News, page 34, April 1, 1931.



Fill Pipe Lid is lifted out by part turn of wrench.

Special Nozzle with lugged locking device —slips down into fill pipe cap.

CONNECTIONS are made so much QUICKER *with this Fill Pipe Coupling*



Part turn of wings on lugged locking device makes the connection TIGHT

CONNECTIONS on the effluent end of the hose are made far *quicker* and with infinitely greater *ease* by means of the Wheaton Quick Fill Pipe Coupling.

The special Fill Pipe Cap is screwed onto the fill pipe and *left* there. The special Hose Nozzle (with lugged locking device) is simply screwed onto the *effluent* end of the hose and left *there.* To connect the delivery hose, the Cap lid is simply lifted out by a part turn of the wrench, the nozzle is slipped down into the Cap, and a part turn of the lugged locking device makes the connection *tight.*

Send today for a sample of the Wheaton Quick Fill Pipe Coupling. Test it for 30 or 60 days. If it does not *prove* that it will save enough *time* to pay for itself many times over, return the coupling for credit or refund.

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FAUCETS · VALVES · JOINTS · COUPLINGS · FILLERS · NOZZLES · FITTINGS

Smith county's first well in the Sabine Uplift region of East Texas was the Guy V. Lewis No. 1 Cook, which extended the Joiner district westward from Rusk county and gave it a width of five miles. The picture shows it flowing through 4-inch flow line before turning into separator through three-quarter inch choker at rate of 137 barrels in 30 minutes. The oil stream extended 200 feet into the woods against the wind. Pressure later tested 400 pounds through choker

reached April 3, when the field produced 175,000 barrels daily from 135 completed wells, 15 of which were shut in for lack of market facilities.

The rapidity of development is indicated by a compilation made April 4, showing the completions for the preceding seven days in the general district. Thirty-six producing wells were completed included 21 in the Joiner, ten in the Kilgore and five in Lathrop areas. Two more had pay and were ready to complete in the Lathrop, 16 in Kilgore and 20 in the Joiner.

Operators in the three areas have been called to meet April 8, at Henderson and Longview to organize their respective divisions for proration under orders of the state railroad commission. Although anti-prorationists are to test production curb in the courts the commission is proceeding as though no action would be taken.

The commission defined the Henderson or Joiner area for proration to include all acreage in Smith and Rusk counties south of a line running east and west through the center of the present post office in the town of Overton, provided that a lease or property cut by such line shall be treated as lying wholly in the Henderson area if more than 50 per cent of its acreage lies south of said line and otherwise wholly outside of such area.

The Kilgore area was defined to include all acreage lying north of the north line of the Henderson area as set forth and south of the Sabine river. The Lathrop or Longview area is to include all acreage north of the Sabine river in the district.

Each of the three areas will have its own umpire. Organization for proration will be watched with general interest because market outlets so far are confined exclusively to shipments of crude through short gathering systems to tank car loading racks for railroad delivery.

Only the Magnolia Petroleum Co. has built a trunk pipeline connection into the field and it is reported to have contracted available capacity for common carrier shipments of others. The Texas Pipe Line Co., Arkansas Pipe Line Co., and the Atlas Pipe Line Co., of Shreveport, are proceeding with construction.

Humble Oil & Refining Co. is shipping in tank cars instead of flanging up its pipeline link with a trunk system from Van to the Louisiana boundary. Gulf Pipe Line Co., after surveying for a short line connection from the Joiner and Kilgore areas to its Oklahoma-to-Gulf trunk system has announced no date for completion of construction. The affiliated Gulf Production Co., however, completed its first well in the district April 4, when its No. 1 Peterson in the Kilgore areas made at the rate of 16,000 barrels initial.

Cities Service Forms New Pipeline Unit

HOUSTON, April 3.—Arkansas Pipe Line Corp. has been formed as a subsidiary of the Arkansas Natural Gas Co., of the Cities Service group to operate a 70-mile crude oil transportation system connecting the Lathrop territory of Gregg County, East Texas, with the Shreveport district refineries of the affiliated Louisiana Oil Refining Corp. Lathrop area production of the Cities Service interests is owned through the Arkansas Fuel Oil Co., another affiliated interest.

Officers of the new pipeline corporation are Henry L. Doherty, New York, president; D. W. Harris, Shreveport, vice president and general manager; H. R. Dickinson, general superintendent; E. N. Watkins, secretary; B. R. Muirhead, treasurer. Active operations will be in charge of Gordon L. Gano.

Construction work on the new pipeline, it is announced, will proceed immediately. Meantime, the Arkansas Fuel Oil Co.'s Gregg county production is being shipped to Shreveport in tank cars on a seven cents freight rate of the Texas & Pacific railroad.

Proration Upheld in One Travis Court

HOUSTON, April 4.—Dan M. Moody's briefs attacking East Texas proration orders on behalf of lease and royalty interests are expected to be filed in Judge J. D. Moore's court at Austin, Travis county. The only other Travis county district judge, C. A. Wheeler, recently gave a sweeping decision in the Danciger Oil & Refining Co. case, originating in the Panhandle district, upholding the right of the railroad commission to order proration in its capacity as the state's conservation agency.

The Danciger case is now on appeal to a higher court.

ADVERTISING PAGE REMOVED

The Mid-Continent Skyline

By Lawrence E. Smith

How to Write a Convention Speech

(As it appears after listening to several thousand of them.)

1—SELECT a title. In case one is not supplied by the program committee. When at a loss for something specific, take "Cooperation," "Service," or any other word that has a grand sound to it. After all, the title is like a circus tent; any kind of a menagerie can be gathered under it.

2—If the address is to deal with the oil business, start off either with some Biblican reference to petroleum or the Drake well. Audiences have become accustomed to such introductions and they resent any departure therefrom. At a recent convention a speaker plunged boldly into his subject, ommitting the classic forms of beginning, and the delegates as one man arose and left the room.

3—Early in the speech it is best to insert one of the standard jokes of the season. These can be obtained, fully equipped with detachable puns and stop light to indicate place for laughing, from any anecdote foundry or from a Pullman smoking compartment. The latter class, of course, will require some renovation.

4—At some appropriate point it is well to undertake to prove the main thesis of the speech by statistics. It will be just as well to hold the figures until late in the address so that the audience will have become mentally dull and unable to check up on the statistics as they are read. Practically any set of figures will do, unless the speech is to be published.

5—The paper should be bright and cheery up to the last paragraph, which should wind up the address with a solemn note of warning. The crowd will then go away convinced that it has heard a powerful message on something and that it should get down to some deep thinking. The quotation, "Ill fares the land, to hastening ills a prey," etc., is always good stuff for the final note.

* * *

Jack Walton, who earned national notoriety and impeachment for himself while governor of Oklahoma several years back, was nominated for mayor of Oklahoma City in the primaries. Although he is under federal indictment for alleged mail fraud in connection with the promotion of the Universal Oil & Gas Co., more than 8000 people voted for him.

* * *

Lewis B. (Tip) O'Neil, formerly of the California Petroleum Corp., before its absorption by The Texas Co. of California, and more recently an Independent operator, heads the newly formed Northwest Gas & Transport Co., which will serve the Anaconda, Butte and East Helena smelting district from the Cutbank field of Montana. It is announced contracts are soon to be awarded for gas pipeline construction totaling in excess of $10,000,000 in connection with the project.

* * *

Ex-Senator William B. Pine, Okmulgee oil producer, was welcomed home from Washington March 20 with a dinner at the Okmulgee Country Club. Senator Pine retired on March 4 when his successor, Thomas P. Gore, assumed office.

* * *

L. L. Langworthy, for many years head of the pipeline department of the Midwest Refining Co., Casper, has resigned to go with the North Central Gas Co. William H. Tolhurst, formerly in the engineering department of the Standard Oil Co. of Indiana, at Casper, also became associated with the North Central company recently.

* * *

Gregory Powell, for several years a member of the Midwest Refining Co.'s industrial relations department and recently secretary to the late Gov. Frank C. Emerson, of Wyoming, has been appointed secretary of the Wyoming board of charities and reform.

* * *

The Mid-Continent section, American Institute of Mining & Metallurgical Engineers, inaugurated the custom March 23 of meeting at luncheon each Monday noon. The place is room 402, Tulsa Building, and visiting members of the A. I. M. E. are invited to attend.

* * *

William L. Clark, formerly of the Caracas Petroleum Corp., in Venezuela, returned to the Mid-Continent after an absence of nine months. He is planning an early return to Venezuela. Mr. Clark was district engineer for the Phillips Petroleum Co. in the early days of the Panhandle development, later serving as chief engineer for the Miller Method Co.

* * *

Lest We Forget: "Leading geologists have concluded that no more large oil pools will be found and are advising buying production even at prevailing high prices." Fifteen Year-ago item in Tulsa Tribune.

Producer to Share the Burden Of Low Gasoline Market

LOS ANGELES, April 3

IN INITIATING crude oil price schedules for California fields, effective March 30, which penalize oils of a high gasoline content, Union Oil Co. of California has definitely indicated a trend to bring the producers into closer contact with the economic status of the industry.

Late in February and continuing through March, gasoline prices throughout Pacific Coast territory were materially reduced.

With the high crude oil price structures that have been in effect for the past year, this condition developed a crisis and involved a change in fundamental economics of the industry.

Instead of maintaining crude prices in the face of lower realization values for refined products, schedules have been revised downward in three substantial cuts, amounting to a total of 90 cents per barrel for 28 gravity crude, $1.27 for 34 gravity and $1.61 for some 40 gravity oils.

Such revolutionary revision of crude structures was believed necessary to bring the local market to a stable footing. In the past independent refiners have met lower gasoline schedules by either curtailing operations during the disturbed conditions or offering the producer a price for his crude substantially below the market price.

With major purchasers refusing to take this independent oil, which was usually in excess of the independent's allowable quota under the proration program, the oil found its way into the hands of small refiners to the unsettling of the gasoline market.

While it was anticipated the trend among Pacific Coast purchasing companies might be toward the taking of oil on a consignment basis, as was initiated by Richfield Oil Co. acting under receivership, it is now thought that such a practice will be used only where large producers are willing to gamble on the netback from the sale of refined products rather than on a stable price for their oil.

Richfield is now working out a sliding scale charge to the producer for acting as an agent in refining and marketing his crude. The consignment plan, while not an unqualified success, due to difficulties of controlling the price of refined products and to the fact that it released oil to independent marketing companies, is still considered to have considerable merit.

Estimates of the length of the period that existing crude and gasoline price schedules will remain in effect varies from 30 to 90 days.

TORONTO—Drilling for oil and gas in the spring will begin in the Three Rivers region of Quebec by the Hope Engineering Co., Mt. Vernon, O. It has acquired 300 square miles in this district, according to reports.

Another company to begin drilling here is the Alberta Gas & Fuel Co.

Association Takes Over Operation Of Kettleman Hills Field

LOS ANGELES, April 3

INSTALLED in its new offices in the Richfield Oil Building, Los Angeles, the Kettleman North Dome Association became a definite entity in the California industry April 1 when it took over control of the association acreage that is to be operated under the recently perfected two-unit plan of development.

The association under the direction of J. A. Brown, president, William Reinhardt, manager, and C. E. Sampson, secretary-treasurer, has outlined a program calling for ten wells to be drilled or recompleted to protect property lines from drainage by acreage not included in the co-operative agreement.

As soon as possible after compensating production has been added by these additional completions it is planned to kill Milham Exploration Co.'s discovery well, Elliott 1 and its offset Continental Oil Co.'s 12-8, both of which have high gas to oil ratios.

A list of employees selected from men now employed in the Kettleman Hills, their salaries, and positions, has been submitted to the directors for approval. The important position of field superintendent has been definitely filled by Chester Inman, formerly field superintendent for Shell Oil Co. and affiliated with that company for nearly 15 years.

Other appointments include, C. L. Clark, for ten years head of the Shell foreign employment department, as chief petroleum engineer; Tabor Mahler, mechanical engineer with Shell for five years, as chief field engineer; C. B. Kimberlin, formerly in the Shell production division, has been appointed production supervisor for the north dome; and W. B. Thomson, auditing department General Petroleum Corp. was selected as auditor.

Some criticism of the selection of engineers comparatively unfamiliar with problems inherent to the Kettleman Hills in preference to men who have worked from the beginning in exploiting this area has been manifest by interested oil companies.

Preparations are now under way to build a main camp on section 18, 22-18 and auxiliary camps at various points along the 13 miles of structure. Gathering systems, tank farms, and roads will also be constructed within a short time.

Thorough Definition of Waste Given In Proposed California Law

By Jack N. Westsmith

N. P. N. STAFF WRITER

LOS ANGELES, April 2

LEGISLATIVE measures designed to regulate California's oil industry form a large part of the daily discussion of industrial committees of the state senate and assembly at Sacramento. While it is anticipated several amendments to these acts will be necessary before they become law, their present forms are indicative of the type of legislation sought.

Perhaps the most important of these is Senate Bill 362, prepared by A. L. Weil, legal counsel for General Petroleum Corp. and sponsored by Senator Sharkey. It is designed primarily as a means of enforcing curtailment under the guise of prohibiting and preventing waste.

Essentially it provides for the creation of an oil conservation commission of three members chosen by members of the five boards of district oil and gas commissioners.

Members to this new conservation commission will be elected for variable terms, one for two years, one for three years and one for four years, successors to be elected for terms of four years, respectively, or in case of a vacancy to fill the unexpired term. The state oil and gas supervisor is to be ex-officio secretary of the commission.

Duties of this commission, which, if it becomes law, will do away with the necessity of proration umpires, will be to inquire into the production of oil in the state and the extent of the current requirements for use within and for shipments to points without and of requirements for the maintenance in storage of such reserves as are necessary to meet and insure the continuity of an adequate supply of crude. It will do this in order to determine whether or not there is waste.

Waste, a major stumbling block in the gas conservation act by reason of its ambiguity, is defined in this bill to include underground waste or destruction without beneficial use, surface waste or destruction without beneficial use, waste by reduction of the total quantity of recoverable crude oil in any underground source of supply by the careless or improper drilling or operation of wells, and the waste incident to or resulting from the production of crude oil when current production together with the amount of oil in storage exceeds current requirements.

Loss by evaporation or leakage and the increased hazard of loss from fire and other causes resulting from storing oil in excess of the necessary quantities is also declared to be waste.

IN ORDER to ascertain the facts necessary to the enforcement of this act, the commission is vested with the authority to require every producer to give information concerning every well under his control for specified periods. All records of the state oil and gas supervisor will also be available to the commission. The lack of full information was another stumbling block in enforcing the gas law.

Owners of storage facilities within the state are also required to make sworn statements regarding the quantity and quality of oil and products in storage.

The commission is empowered to fix a total allowable production from the state. If production exceeds this figure the daily output from the recalcitrant fields, zones or wells is to be ordered reduced so as to avoid a diminution in the amount of oil ultimately recoverable from any field.

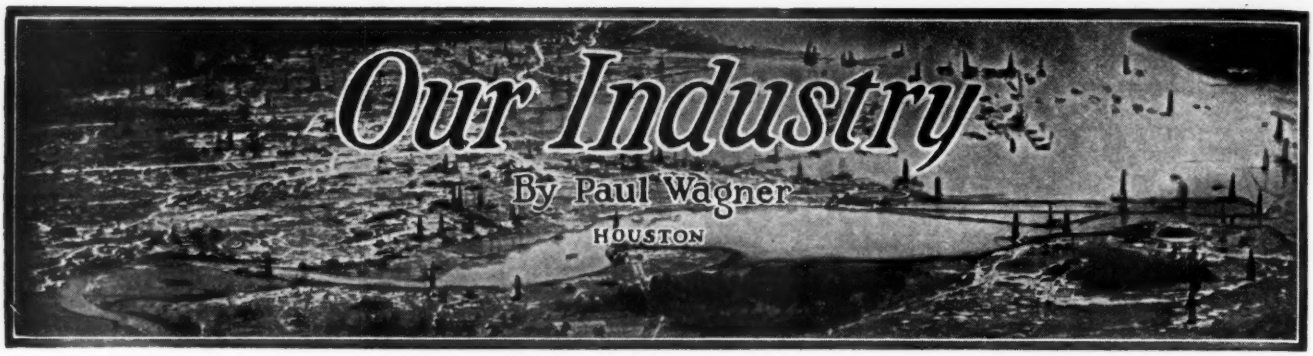
When the allowable production from any area is determined, the act states that crude produced in violation of this amount shall not be removed by any third person.

To offset advantages to be obtained by securing a writ of prohibition or stay against the commission's order, the act provides that, in case the order is eventually held valid, wells producing during the period of the writ must subsequently be closed in until such time as the amount of oil that they produced in excess of their allowable under the order is made up.

At the moment the greatest point of controversy between majority operators who are proponents of the bill and independents, who are for the most part against it, is the question of the selecting the three commissioners. Independents oppose the selection by district oil and gas commissioners because it is estimated over 75 per cent of them are employees of the six major companies.

Another legislative measure that is objectional to the independent interests is Senate Bill 363, which aims against town lot drilling. In the original it provides that any well drilled and permitted to produce oil or gas within 100 feet of an outer boundary or a piece of property or within 150 feet of a public street, road, highway, or another producing well is a public nuisance.

Parcels of land in one or different ownerships may be operated as a single unit in which case the outer boundary is taken to mean the boundary of the units. The act does not apply to deepening, redrilling or repair of wells heretofore drilled.



ROBERT R. PENN, vice president for production of the American Petroleum Institute and chairman of the Central Proration Committee of Texas, disclosed a hitherto unwritten chapter in his career at a recent railroad commission hearing in Austin.

Former Governor Dan Moody, as counsel for an East Texas anti-prorationist group, was trying to trap Penn on a technical question.

"You're not a geologist, Mr. Penn, are you?" Moody asked.

"I was once asked to take the chair of geology at the University of Texas," Penn replied.

"That was when you finished school."

"Yes."

Penn never practiced in the geological profession. He entered newspaper work successively at Wichita Falls and Dallas. His first important connection with oil was in the Mexia-Powell development.

* * *

"Hub" Meyer of Independence, executive assistant in the Prairie Oil & Gas Co.'s headquarters office, holding the arm of David Donoghue, technical advisor to the Central Proration Committee of Texas. The snapshot was taken at a recent proration meeting in Austin. Mr. Donoghue is at the left.

* * *

A little known phase of Oklahoma history, and the part played in it by Edward L. Doheny, Los Angeles oil magnate, has just come to light. So far as known this is the first publication of the fact that Doheny, at the age of 16 years, buried Patrick Hennessey, noted frontiersman, after Indians had burned Hennessey to death on a wagon wheel in northern Kingfisher county.

Hennessey's body was found by a surveying crew with a man named Dubose for its chief and Doheny as a chain carrier. Despite the weary travel the surveyors had undergone, Doheny insisted on Hennessey's proper burial, saying anyone is entitled to his "six foot-three of ground."

Doheny is said to have himself carved the wooden headboard that long marked the frontiersman's grave where the town of Hennessey now stands.

* * *

Charles Laverne Decker, widely known southwestern geologist, who returned to this country from Central America about two years ago, is making headquarters at Marshall, Texas, where he has been recently engaged in blocking Harrison county acreage for drilling. His block is northeast of the Gregg-Rusk district development area, along the inferred trend of the East Texas shoreline of the regional Sabine uplift.

* * *

John H. Markham, Jr., president of the Petroleum Corp. of America, accompanied Harry F. Sinclair and others on their Pacific Coast trip at the beginning of March.

* * *

Fred C. Kiskaddon is field superintendent in charge of wildcatting operations on a cable tool test contracted by R. M. Baker, Hollywood operator, in 9-13S-35E, northwest of Lovington, in Lea county, New Mexico. The drilling contract went to the Aladdin Oil Co. of Tulsa.

* * *

Newly elected officers and members of the executive committee of the San Antonio section, American Association of Petroleum Geologists, include Herschel Cooper, consulting geologist, president. L. W. MacNaughton, Amerada Petroleum Corp., vice president; J. D. Hedley, Barnsdall Oil Co., secretary-treasurer; Douglas R. Semmes, consulting geologist and retiring president, and Ed. W. Owen, Wentz Oil Corp., members of executive committe.

David Donoghue and "Hub" Meyer

Hobbs Field, Always Under Proration, Will Pay Out in Four Years

By Paul Wagner

N P N. STAFF WRITER

HOUSTON, April 4

UNDER proration, condemned by some operators as an impractical method of developing an oil field, the Hobbs pool, in Lea county, New Mexico, will pay out its total investment in a little more than four years.

More than that, the field will be left with its productive capacity intact for years to come, the future oil to be recovered at a lower cost than in many other fields where unrestricted drilling has been followed.

This showing for proration in the Hobbs field is the more remarkable, when it is taken into consideration that the price of crude has been low over the entire period of Hobbs development.

The Hobbs field is now prorated on allowable production of 32,532 barrels daily, from 142 wells on 126 proration units of 40 acres each. Its "yardstick" potential for the March 16-31 prorating period was 1,122,963 barrels daily.

Field limits have not been defined by drilling, but structural data indicate the producing area eventually will be double the 5040 proved acres now included in its proration program.

Future investment in developing the 5000 additional acres assumed for eventual production, will not exceed the $12,000,000 already spent at Hobbs for leaseholds and development.

Estimated ultimate recoveries for the entire field, engineers say, will be over 200,000,000 barrels under continued conservative exploitation and development. At present no additional wells are being drilled within field limits.

Producing conditions at Hobbs are similar to the natural water drive influence found in the Yates and Winkler, Texas, division of the Permian salt basin geological province. Production comes from a deep horizon at approximately 4000 feet, as compared with about 3000 feet in the Winkler area and 960-1650 feet, according to surface elevation, at Yates. Development costs are correspondingly higher.

Like Yates, where it has been estimated open flow exploitation would reduce the field from a one-day potential of 3,500,000 barrels to relatively negligible production[1], the Hobbs area would be almost immediately ruined by "turning it loose."

Early Winkler exploitation also provides a "key" to what might be expected were Hobbs production under proration permitted to reach too high a level.

Maximum Winkler exploitation reached 321,982 barrels, from 158 wells, May 5, 1928, before proration became effective; and resulting water encroachment prevented Winkler proration from attaining the results achieved at Hobbs and Yates. Both Hobbs and Yates have been prorated from the beginning of production.

Water encroachment up-dip of the structure and through vertical fractures connecting the several producing zones cut the Winkler ultimate yield from an estimated 350,000,000 barrels total to a final recovery now set up as 175,000,000 barrels maximum; approximately half what the field might have produced had it been handled like Hobbs or Yates.

In early stages of proration, Winkler was allowed 150,000 to 175,000 barrels daily. The field had a "yardstick" potential of 2,633,428 barrels daily at the end of December, 1928, and it is now rated for prorating purposes at approximately 112,000 barrels daily. It is now producing 48,000 barrels daily and is unable to give up, without uneven withdrawals, its present allowable production of 60,000 barrels daily.

The Winkler development represents figuratively, a rapid dissipation of a fortune in contrast with policies at Hobbs and Yates of keeping the principle intact and withdrawing something akin to interest thereon. Within four years from its discovery, Dec. 17, 1928, the total investment on developed acreage in the Hobbs field will have paid out at posted prices of crude of 65 cents average, prior to March 10, 1931, and 40 cents a barrel thereafter.

For an additional 5000 acres developed at an average expense of $80,000 per well, a somewhat longer time would be required to return the investment because of the present lower posted price of crude.

FIGURES herein are based on development and exploitation of the field to date, without regard to the future except as noted.

From the date of discovery to Jan. 1, 1931, Hobbs produced 6,633,000 barrels of crude, marketed at an average gross price exceeding 65 cents a barrel. From Jan. 1 to March 10, 1931, under similar price conditions, 2,240,000 barrels were marketed. In the three weeks from March 10-31, the field gave up 640,000 barrels at gross market price of 40 cents a barrel.

Deducting an arbitrary assumed cost of five cents a bar-

[1]NATIONAL PETROLEUM NEWS, April 1, 1931.

rel for field recovery of crude, plus taxes and similar charges, production prior to Jan. 1, 1931, returned Hobbs operators on the 60 cents a barrel net basis $3,979,800; from Jan. 1 to March 10, 1931, they got back $1,344,000; and from March 10-31, they were returned $224,000, figuring the net for the three weeks period at 35 cents a barrel.

In the five cents a barrel production cost two cents is arbitrarily allowed for taxes and similar charges; the field recovery, or lifting cost for flowing wells is based on known performance under Hobbs and Yates field conditions.

A total net return of $5,547,800 thus had been obtained from Hobbs, prior to April 1, 1931. Charged against field expenditures of $11,864,000 for proved ground, this left $6,316,200 still to be paid out.

Even at the present 40 cents gross, or 35 cents net, price for production, a future yield of approximately 18,000,000 barrels will pay out the developed acreage in the field; attaining this result in 554 days additional, or approximately 18 months, on the present prorating basis of 32,532 barrels daily.

There will then remain approximately 75,000,000 barrels for future recovery from the 5000 plus acres now exploited. Under present conservative production practice most of this oil may be considered recoverable at approximately the three cents a barrel lifting cost mentioned.

Present Hobbs investment of $11,864,000 consists of the cost of drilling and equipping the 142 wells at an average of $80,000 each, or $11,360,000, plus 5040 acres of proved ground at maximum average bonuses of $100 an acre, or $504,000.

If it is desired to figure leasehold investment on the basis of 10,000 acres for eventual Hobbs production this would add only $500,000 more to the hitherto mentioned total; and it would require only about two months longer at a net price of 35 cents a barrel for crude, to retire this additional capital outlay.

Ralph O. Dietler

Former Midwest Man Comes to Tulsa

TULSA, April 4.—Ralph O. Dietler, for several years identified with the management of the Midwest Refining Co., Denver, has been made vice-president of the Stanolind Crude Oil Purchasing Co., succeeding E. B. Marlow, who resigned to become associated again with the Sinclair interests.

To accept the new position, Mr. Dietler resigned as assistant to President T. A. Dines, of the Midwest, and as a director in that company. He will move to Tulsa soon.

Mr. Dietler began his service with the Midwest Refining Co. right after he was discharged from the army at the conclusion of the World War, as secretary to H. M. Blackmer, chairman of the board. He executed various duties later and in 1928 was made asistant to the president.

He is a native of Denver. He was one time private secretary to the vice-president of the Colorado & Southern Railway and went with his employer to Chicago with the Burlington lines. He is reputed to be an expert golfer, which reputation will no doubt be quickly investigated by some of the oil men in Tulsa who are somewhat vain over their own skill.

Osage Lessees Request Rental, Royalty Cut

TULSA, April 4.—Reduction of rentals on undeveloped acreage and royalties, both on oil production and on gas and natural gasoline in the Osage reservation of Oklahoma was formally asked of the Department of the Interior in a resolution adopted March 31 by the Osage Oil & Gas Lessees Association in the annual meeting here.

The request made of the department asserts that the prices of oil and gas and natural gasoline are so low that many wells will have to be abandoned. It was asked that rentals be reduced to 50 cents per acre, instead of the present one dollar; that oil royalty be made one-eighth instead of the one-sixth and higher now prevailing and that royalties on natural gas and casinghead gasoline be proportionately reduced. The resolution recited that companies in the Mid-Continent have generally reduced rentals paid under commercial leases.

The association also asked that the maintenance of service agents at Pawhuska be modified to permit oil companies to designate as such agents their own employes. Nearly all the operators in the Osage have employes stationed in Pawhuska and the appointment of other service agents, usually attorneys, constitutes an expense they would avoid.

The matter of division and distribution of residue gas from gasoline plants to the oil lessees, a troublesome problem for several years, is to be taken up again with the department through a committee.

Hayes McCoy, of the legal department of the Empire Companies, Bartlesville, was elected president of the association; W. P. Z. German, Skelly Oil Co., vice-president; W. C. Franklin, attorney, treasurer and Harry H. Smith, secretary. R. F. MacArthur, vice-president of the Barnsdall Oil Co., was the retiring president and H. R. Straight, vice-president of the Empire Oil & Refining Co., served last year as vice-president. Messrs. Franklin and Smith were re-elected.

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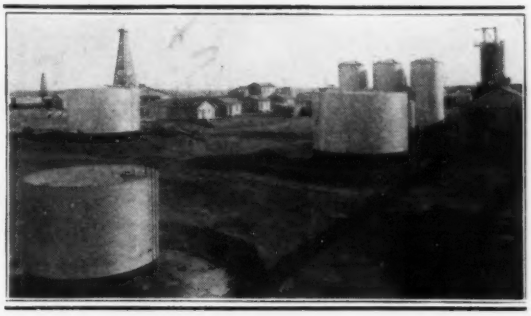

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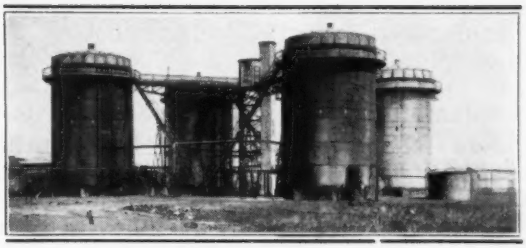

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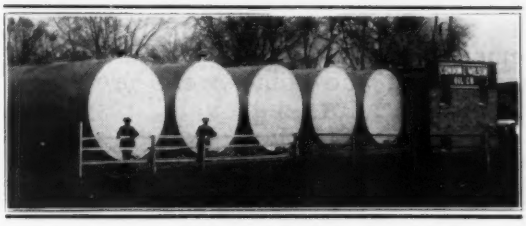

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STEEL PLATE CONSTRUCTION

Vacuum Unit and Rebuilt Filter Plant Modernize Emlenton Refinery

By Arch L. Foster

N. P. N. STAFF WRITER

CLEVELAND

UTILIZATION of the most modern refining equipment combined with the application of scientific principles to practical operating knowledge have together made the Emlenton Refining Co.'s rebuilt plant one of the most efficient and up-to-date refineries in the Pennsylvania district. Increasing the plant from less than 1000 barrels per day to 2000 barrels is only one of the accomplishments of the management which has mixed brains with hard work to excellent advantage.

Faced some two years ago with the problem of expanding the capacity of the plant to care for increased market demands, the management, under Guy B. Hunter, manager of the company, spent a great deal of time, thought, and effort in arriving at a decision as to the types of new equipment to be added. Being fully acquainted with the strides that have been made in the last few years in the design and operation of refining apparatus, it was decided to take advantage of the most recent developments insofar as these could be applied to the specific problems of the refinery.

By experiment it was found that distillation setups in use in other localities, handling different types of crudes, or producing a series of products differing from that being manufactured by this company, were not entirely suited to the work required of the equipment in this plant. Difficulties in the preparation of wax distillates and cylinder stock bottoms which were pressable and centrifugable, respectively, and in an economical manner, could not be obtained from the systems being operated in other parts of the country. Co-operation with the Badger Co. resulted in the design of suitable distilling equipment, and a 2000-barrel Badger unit was installed, the unit going "on stream" November, 1928.

This unit consists of a topping still, with tube furnace, bubble tower and a stripper tower of three sections, in which the side streams of light distillates are stripped with steam, operating at atmospheric pressure. A second tube still and a bubble tower operating under vacuum, with steam, and an atmospheric rerun unit of tube still and tower complete the new distillation equipment.

As was the case in all refineries until very recently, fullers earth, or filter "clay" was handled almost entirely by hand,

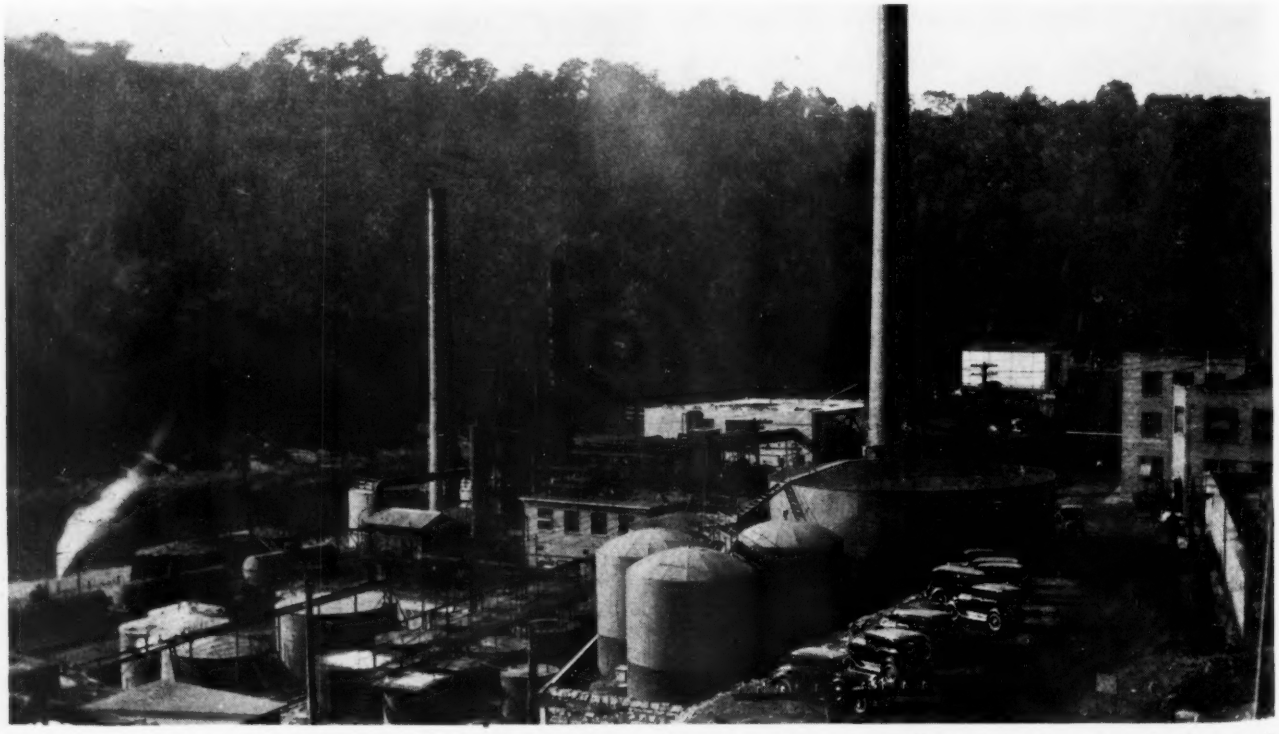

Fig. 1—View of main part of Emlenton plant, Badger unit left center, new boiler house in center background

Fig. 2—View of opposite end of Emlenton plant; filter house, burner house, and overhead portion of conveyor system in right middleground

moved about from burner to storage to filter to burner again in bags, gondolas, wagons, "Irish buggies" or similar ways. To simplify this handling, and to improve the efficiency of clay burning as well, a complete system of conveyor machinery was next installed, together with a 10-hearth Nichols-Herreshoff burner, which brought this part of the plant up-to-date.

Being pressed for space for a new sweat-room for handling wax, it was decided to erect the sweat-room atop the wax house. It is constructed with a steel frame, a double wall of hollow tile with a 1-inch air space between the walls; the outside of the wall is plastered. The roof is corrugated iron with four inches of mineral wool insulation beneath. A Taylor dual control instrument is placed below in the pump room, its bulb, 20 feet long, being so placed about the sweat chamber as to register the average temperature of the interior. Galvanized sheet metal-covered wooden doors give entrance to the chamber. Manual control valves are on the chamber level. The chamber contains seven pans of the conventional type.

In order to bring up the filter capacity to properly handle the increased throughput of the plant, a battery of six 16-ton filters was added. Cylinders are arranged in sets of three. The system of hookup is shown in Fig. 3. Two of the cylinders are always in operation in series, and the incoming oil or solution passes through the cylinder containing the older, or longer-used clay, first, entering from the bottom through a perforated basket of the type common in Pennsylvania and elsewhere, passing up through the clay, which is of 30-60 mesh, and out through a screen at the top. This screen is of monel wire filter cloth, placed between two steel disks 18 inches in diameter, perforated with ¼-inch matched holes, bolted together, and fitting into a seat in the neck of the cylinder, secured in place by twist-lugs.

One of each trio of filters is always in process of washing, steaming, emptying and refilling. Clay from the burner is stored in an overhead bin, from which it flows by gravity through funnel and pipe to the cylinder. When the maximum yield has been obtained from a filter, as indicated by predetermined color of the stream therefrom, showing about an 8 N. P. A. color at the end, valves are opened to send the stream from the second filter then operating into the refilled cylinder, those to the old filter closed, which is the cleaned out and refilled in the same manner.

Another commendable feature of the plant is the use of a low vacuum on the look-boxes in the run lines. This vacuum removes the vapors from the filter house, not permitting them to collect in the building or even to get into the room itself.

Since the run lines enter the filters at the bottom, practically all the vapors are absorbed by the oil in passing upward to the filter exit, thus saving naphtha and reducing materially the fire hazard always seriously present in any filter house where some such precaution is not taken.

The older filters in use at the time of opening the rebuilding program remain as before, except that the system of lines has been shortened and instead of running at all angles, levels and directions have been rearranged, in vertical or in horizontal banks as the situation demanded. This changed the filter rooms from the general appearance of a tangled jungle to an open, clean systematic layout giving a maximum of flexibility of operation, of cleaning and ease of moving about the filters. Filters are equipped with Merco cocks throughout.

Necessarily additional boiler capacity was needed to meet the

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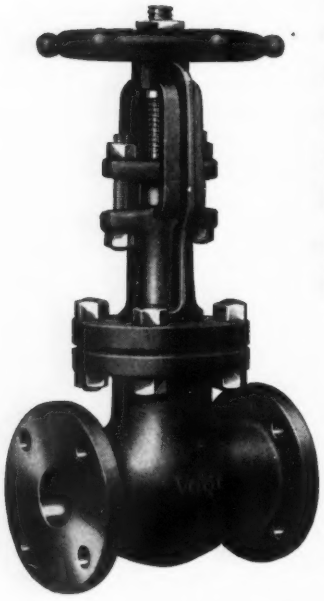

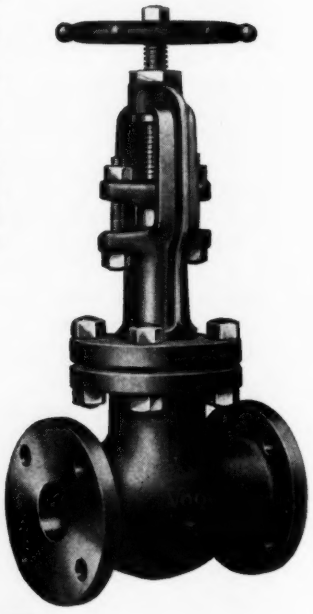

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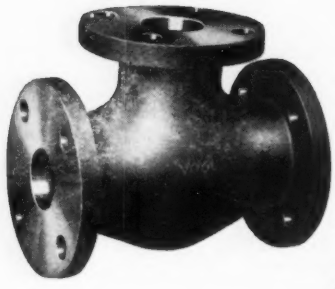
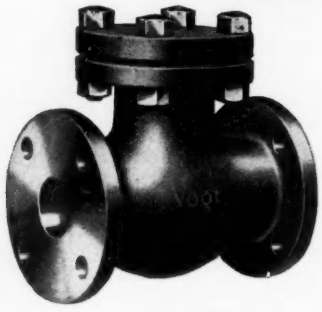




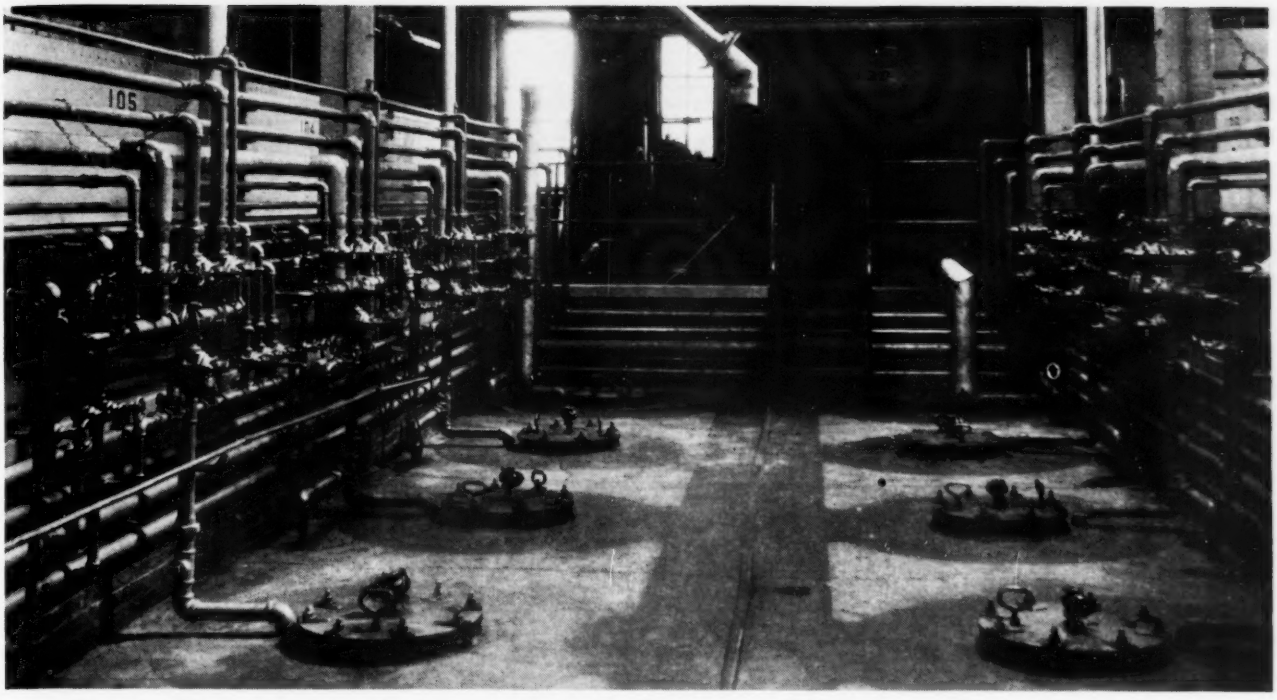


Fig. 3—Piping arrangement on upper level of filter house; entire system layout shown in Fig. 4

increased demands of the expanded plant. One new 500-B. H. P. Babcock and Wilcox cross-drum, bent-tube boiler has been added to the older battery of two 250 B. H. P. and one 285 B. H. P. boilers. The entire setup is being enclosed in a new boiler house. To improve the operating capacity of the steam plant and to eliminate the nuisance of soot and stack gases (the plant is on the river level between high ridges on either side), a new 180-foot brick stack has been erected. The increased draft so obtained has increased the output of the oil boilers, and greatly abated the smoke.

A rather unique and efficient fire alarm system, developed mainly by E. E. Ebner, superintendent of the plant, has been installed, of which more will be said in a later article. The personnel is drilled at regular intervals handling imaginary fires in various locations. Apparatus includes a chemical engine, three portable Foamite Engines and two Foamite Generators in addition to the ordinary equipment. A simple but fast and efficient method of meeting fire emergencies has been developed.

The refinery is supplied with water for fire protection by two separate fire mains. A new 6-inch line from the city system supplies 500 g.p.m. at 70 pounds pressure, and a new 8-inch plant line supplies 1500 g.p.m. at 80 pounds pressure. Fire hydrants are liberally distributed through the property, and a Goulds Underwriters centrifugal pump delivers the water to the plant fire mains from a 1,000,000 gallon reserve tank.

In addition to major items of expansion enumerated above a wholesale program of piping rearrangement, clearing of space for storage, and other matters of plant improvement is being carried out, increasing plant efficiency, simplifying operations, and eliminating obsolescent equipment and methods.

The control laboratory is housed in new quarters, concrete floored. Work benches were designed and built in the plant, the framework of new pipe and fittings, topped with transite board and the edges bound with brass angle strip, screwed down. In addition to the regulation air, gas, water, steam and electric fittings, separate water and oil drains are provided, waste oil being recovered along with other waste from the plant proper. A separate room is provided with proper hoods for the determination of flash and fire points, and the tests are made under red shaded lights, rather than in darkness. This gives a brilliant blue flash, more easily identified than the flash seen in a darkened room.

Space is provided in the laboratory for the installation of test dynamometers and engines, which are to be put in for carrying out investigations on lubricants and fuels, in the near future. On the second floor of this building plans are made for an experimental plant to be installed shortly, to facilitate further research work on problems of immediate importance to the company. The laboratories are under the direct supervision of S. E. Ebner, superintendent of the refinery.

The pipe and machine shops have new quarters. A brick and steel building 100 feet by 35 feet was recently completed for these departments. The shops have been equipped with new and modern machines. Locker rooms, toilets, wash rooms, and shower baths are also located in this building. The second floor is given over to the supply department, the locker rooms, eating rooms and electrical department.

A 32 feet by 36 feet, three-story wing was built with the above building. This part houses the laboratory, plant offices, research department and filing rooms.

Operation of the Plant

Under the present system of operation, the local crude, after

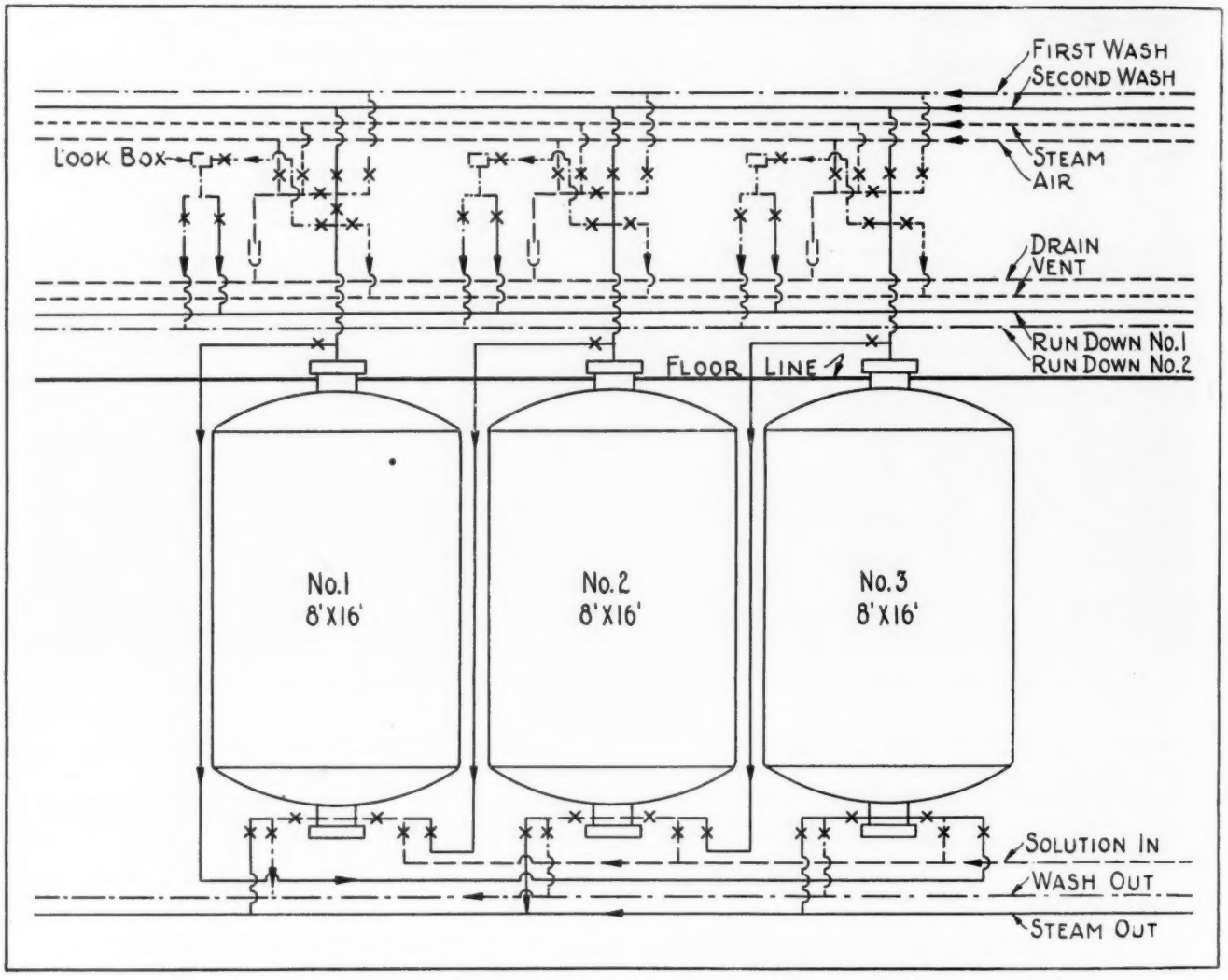


Fig. 4—Piping layout of filter units, showing how continuous operation is handled

passing through heat exchangers and settling tanks is run direct to the pipe still of the atmospheric unit and flashed in the bubble tower, where, with the aid of steam, about 66 per cent, or two-thirds of the crude is taken off as gasoline distillate, special naphtha distillate, kerosine, and gas oil, leaving the wax distillate and cylinder stock fractions undistilled. The three side streams are stripped with steam in the stripper discussed above.

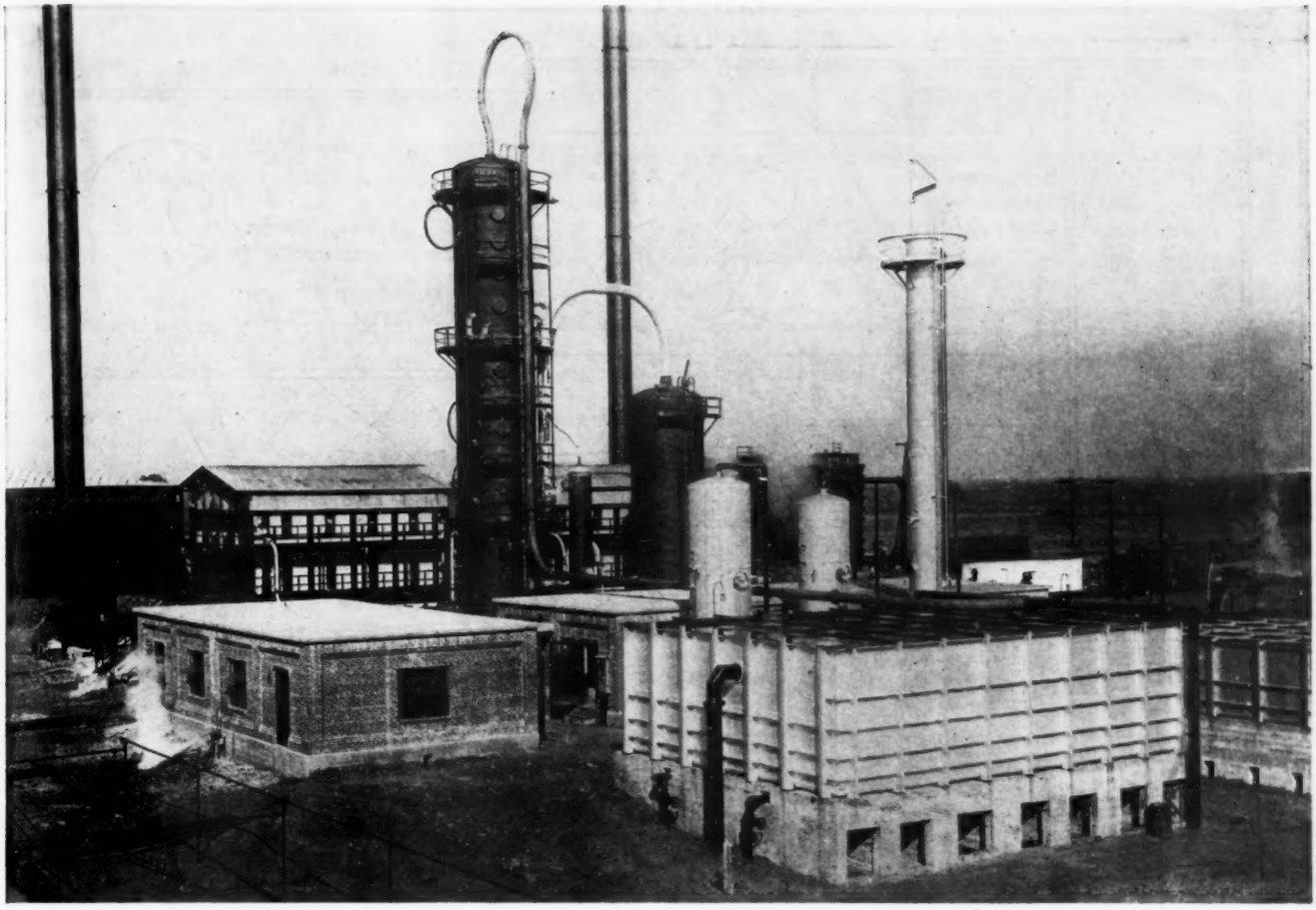
The heavy bottoms from the atmospheric tower are next pumped to the second pipe still under vacuum, brought up to a temperature of 660 Fahr. when making 145 Vis. cylinder stock, and flashed into the vacuum tower, immediately above the three stripping plates. Steam is admitted at the bottom of this tower to strip the bottoms and to facilitate vaporization of the overhead wax distillate.

The wax distillate vapors are condensed in an Elliott condenser overhead and vacuum is maintained by a jet condenser also supported above the tower. Such a procedure yields a wax distillate of maximum pressability, and at the same time the cylinder stock bottoms are in the best condition for wax removal by the centrifuge. This procedure has become general practice in the refining industry within the last two or three years, so well known as to warrant no further detailed discussion. The tower is equipped with side outlets to permit taking off overhead cylinder stock if desired, which, however, is not being done at present.

The cylinder stock bottoms are pumped from storage, mixed 40-60 with a solution naphtha of approximately 160 Fahr. initial and 380 end point, and filtered *up* through fullers earth of 30-60 mesh, operating the filters in batteries of three as previously discussed.

In Fig. 3 may be seen the arrangement of filters and piping by which the filters are so interconnected that at all times one filter is "down" for cleaning out spent earth and replacing it with fresh earth, while the other two of the battery are on stream in series. Such an arrangement makes for maximum time on stream, and a completely continuous operation without the necessity for slowing down the rate of one filter to compensate for the slowness of another in another stage of use. The scheme also simplifies the matter of obtaining at all times the standard color in the rundown tanks, and necessitates a smaller number of tanks due to the minimum amount of blending for color that is required.

A material saving is accomplished by the manner of utilizing the filter wash in "cutting"



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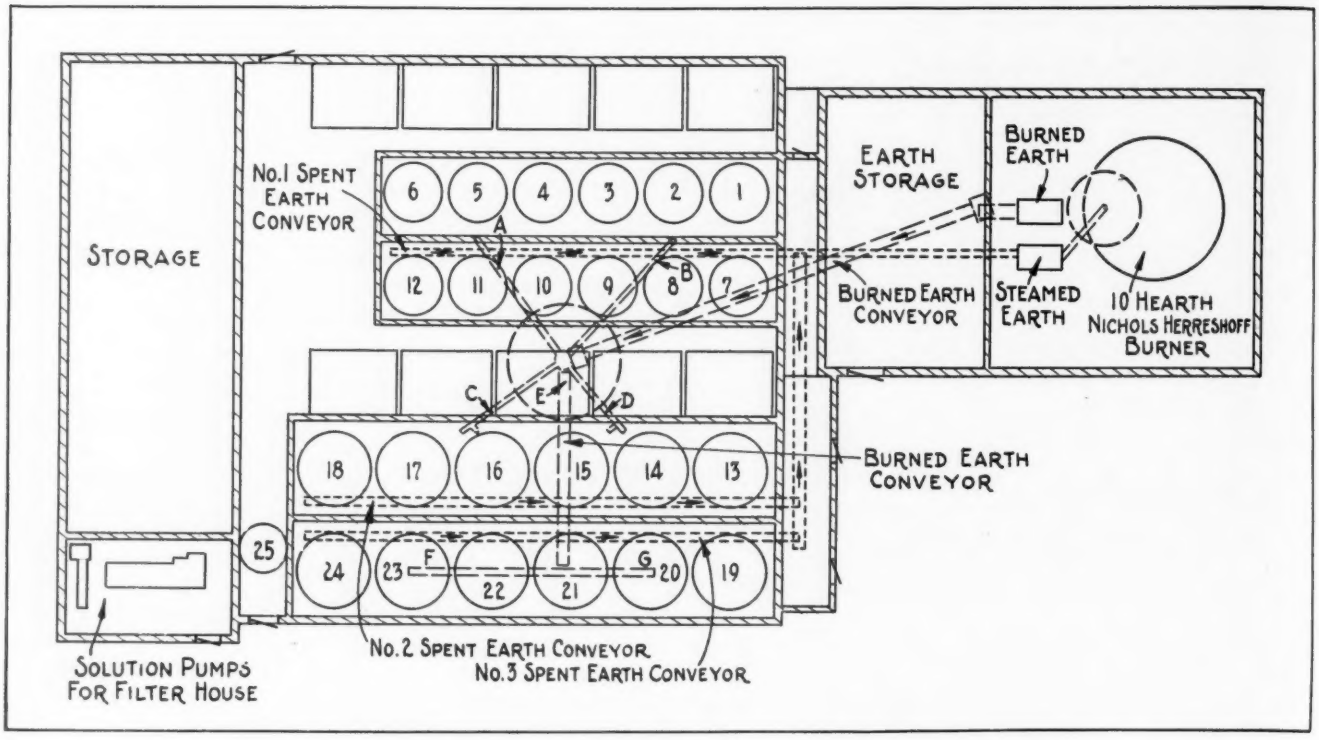


Fig. 5—Plan of filter house and clay burner, with belt conveyor system

the cylinder stock to the desired fluidity for filtering. Naphtha with which the filters have been washed is forced by one of two pumps into a common discharge line, into which another pump forces cylinder stock, the two liquids being mixed in this line. This mixture is discharged into a 500-barrel surge tank, from which the filter charging pump takes suction. Each of the two mixing pumps are equipped with meters, and laboratory data show that the maximum variation from the standard 60-40 mix is less than one per cent. This mixing of the stock with the filter wash eliminates the rerunning in a still, a decided improvement in manufacturing costs.

By this system of blending, one mixing tank has been eliminated. The heat in the stock is also used to heat the mixture on its way to the filters. Extra filter house capacity enables the superintendent to synchronize the vacuum still output with the demand of the filters, using up the stock practically as fast as it comes to storage. Storage time is so short that little if any oxidation or discoloration of the stock occurs. It has been found, according to the management, that if the storage interval is kept low, the net throughput is appreciably greater.

From the filters, where the stock solution is filtered to color in one operation, the solution passes to tank chillers and from there to the Sharples centrifuges, where wax is removed at a temperature of approximately minus 1 Fahr., to yield a stock of 20 pour point. The centrifuged solution is next reduced to flash in the Badger rerun unit, and is finished by another light filtration to remove moisture and "haze." Under normal conditions of operation the centrifuged wax is 13 to 15 per cent of the cylinder stock bottoms.

In handling the wax distillate, advantage has been taken of the more recent developments in the theory and technology of crystal formation and the handling and pressing of paraffin distillates. For years the cane and beet sugar industry has been cognizant of the physical laws governing the formation of crystals, and has developed to a high degree the technology of crystallization in solutions containing, in variable proportions, inhibitors of crystal formation. Without the understanding of these laws and their application it is extremely doubtful if sugar as we know it would be an article of commerce.

While paraffin wax is not considered to be as definitely and easily crystallizable as is sucrose or cane sugar, most technologists who have seriously considered the problem believe that the same general laws apply and that the application of these principles to wax crystallization is the first step in improving the older methods of manufacture. Modern distillation methods, combining short heating time, low vapor temperatures, with careful fractionation of distillates, appears to concentrate the colloidal or inhibitory matter in heavy petroleum fractions in the heavier cuts, and, in this instance under discussion, to send overhead a wax bearing fraction comparatively free from compounds which interfere with good crystallization. Such operation "kills two birds with one stone," inasmuch as the centrifuge handles best the so called "amorphous" wax, while wax in its highest state of crystallization is most desirable for extraction in the conventional press.

Taking advantage of the more recent developments in theory and practice along this line, the wax distillate in this plant is first pumped to four "passes" in the chilling plant. These pipes do not contain pro-

ADVERTISING PAGES REMOVED

pellers or conveyors of any sort, the cold cylinder stock solution from the centrifuges is here used as refrigerant, and the distillate is passed through at the slowest velocity consistent with maintaining the throughput of the plant, and with a minimum of agitation. This slow chilling without agitation permits the formation of a comparatively small number of crystals which may gradually increase in size as the process continues, instead of creating a greater and greater number of small crystals by shock chilling.

The older plant contained 18 passes in the chillers. To further carry out the principle of slow chilling and of regular crystal growth, eight additional passes have been added to the system and the oil is still passed on at the slowest rate with a minimum of agitation and turbulence. The greater ease of pressing, lower percentages of foots in the pressed wax, and the increased throughput of the plant, prove conclusively that these improvements of technique have given results. The capacity of the presses has been increased approximately 20 per cent.

From the chillers the distillate is pressed in conventional Carbondale presses, at a temperature of around 15 degrees Fahr. The crude wax is normally about 10 per cent of the wax distillate charged to the presses. After pressing, the distillate is rerun into three fractions; a "top" of gas oil, which is cracked, a non-viscous neutral of around 72@100 viscosity and bottoms of about 200@100 viscosity. The two fractions are lastly given a light filtration, requiring 8 to 16 tons of the total filter capacity during normal operation, bringing the color to approximately 1½ and 3 N. P. A. respectively. That little improvement in color is necessary in these distillates is evidenced by the fact that yields as high as 8000 gallons per ton of new clay are frequently obtained. Average yields of cylinder stock filtered before dewaxing range from 220 gallons to 300 gallons per ton, depending on the condition of the stock and the age of the clay.

The pressed wax is sweated to produce, at present, one grade of finished wax, m.p. 124-126, the cycle of sweating requiring normally about (48) hours. The foots oil obtained during about the first four or five hours of sweating is recycled with later batches of crude wax, the remainder of the foots being combined with gas oil and cracked. The finished wax represents about 33 to 34 per cent of the crude wax charged to the sweaters.

NEW EQUIPMENT

National Lead Co., 111 Broadway, New York City, has published a catalog describing the recovery and concentration of sulfuric acid through the Simonson-Mantius vacuum process for use in oil refineries for the concentration of separated sludge acid. A super vacuum concentrator is described which concentrates sulfuric acid to any strength up to 66° Be. in one apparatus, using high pressure steam only.

The process removes the water of dilution and concentrates the weak sulfuric acid to a desired density in a closed vessel under a relatively high vacuum by the application of indirect heat. One of its distinctive advantages is that there are no fumes or bad odors. The low boiling temperatures in the system practically prevent the decomposition of acid and no fumes can escape the company claims.

The bulletin describes the partial concentration and blending to 66° Be., concentration to 60-61° and also describes the separation of sludge acid, illustrating the process with diagrams of sludge acid and restoring plants.

* * *

Oliver United Filters Inc., New York, has acquired the right to manufacture and sell the stream line filter in North America.

This type of filter has operating characteristics which other types of filters do not possess, the company claims, and offers filtration possibilities hitherto unavailable for certain industries.

In an illustrated catalog recently published, the work and practical application of these filters are described.

Three types of vacuum filters are manufactured by this company, as well as several modifications of the three major types. All these continuous filters operate on the same principle and differ only in design. On both the drum and disc type the complete cycle of filtering operations continues with no interruptions between successive steps.

* * *

"National Sections For Condensing Vapors, etc.," is the new booklet issued by National Radiator Corp., Johnstown, Penna., to further illustrate and introduce their new type of condenser sections.

One unique feature of the sections is the type of inner vanes used in them, cast integral with the body of the section. In this manner the amount of surface available between liquid or vapor and cooling medium is greatly increased and results in much greater cooling efficiency, according to statements made. Sections are assembled by flanged connections with copper gaskets, or screwed.

Included in the catalog are a large number of tables and other data on heat transfer, heats of vaporization, fusion, specific volumes of vapors, vapor and liquid densities, specific heats and other useful information.

* * *

"Interlock Control" is the new Bulletin No. 9 of the Engineering Development Dept., Brown Instrument Co., which may be obtained from the company, Philadelphia, on request.

The bulletin covers in detail the theoretical and practical considerations in the development and use of interlocked control, a new type of control brought out by that company whereby the changes in refinery operation are anticipated by the instruments, with the result that "hunting" is more nearly eliminated, and fluctuations in control are materially reduced.

Specific installations are discussed, and specimen charts are included to illustrate points brought out in the explanation

Visiting Around the Refineries

By Arch L. Foster

DR. CHARLES L. PARSONS, secretary of the American Chemical Society with headquarters at Washington, has recently been made business manager of the society, a position just created by the board of directors.

Dr. Parsons is well known, both among the scientists of American and internationally, as a frequent contributor to scientific journals, and a research man of wide experience. He holds the degrees of doctor of science and doctor of chemistry, and was awarded the Nichols medal in 1904 for research on the atomic weight of beryllium. From 1911 to 1919 he was chief chemist of the U. S. Bureau of Mines. He is a member of the Nitrate Commission and of the U. S. Advisory Board on Gas Warfare.

In addition to memberships in Sigma Xi, Phi Lambda Upsilon, Kappa Sigma, and other organizations he is an officer of the French Legion, and of the Crown of Italy. In administering the affairs of the A. C. S., in the building up of which he has been very instrumental, he will handle the business affairs of the largest scientific professional organization in the world, with a membership of 18,000 and a budget for 1931 of $600,000.

* * *

ANNOUNCEMENT is made by the Carnegie Institute of Technology that the Third International Conference on Bituminous Coal will be held in Pittsburgh, Nov. 16 to 21, 1931.

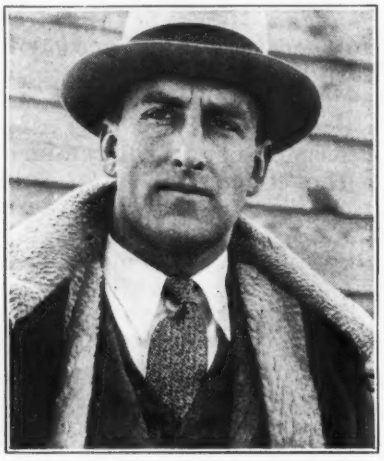
The program to be given will include papers on the carbonization liquefaction, and gasification of coal; coal byproducts; power plants, domestic heating, the mechanism of combustion, and other related subjects. Members of the Advisory board for the conference are, Walter C. Teagle, A. W. Mellon, Gerard Swope, J. A. Farrell, John Hays Hammond, Samuel Insull, A. G. Pratt, F. B. Jewett, F. A. Merrick, Matthew S. Sloan and H. B. Rust.

* * *

C. C. MORRISSON, until recently in charge of experimental work on grease manufacture and related problems, for the Gulf Refining Co. at its main Research Laboratories at Point Breeze, near Philadelphia, has been made chief chemist of the Gulf's new refinery at Neville Island, near Pittsburgh.

Mr. Morrisson is a chemical engineer who graduated from the University of Texas with a B. S. in Ch. Eng. in 1923. He went immediately into the employ of the Gulf Co. in its experimental plant at the Port Arthur refinery, one of the largest, if not the largest, refining plant in the world. That his experience in refining technology has been wide is evidenced by the company to fill the post just mentioned. Recognition of his capabilities and his promotion to a position of responsibility is gratifying to his innumerable acquaintances.

* * *



R. P. Wood, assistant construction superintendent, with B. W. Winters, in the building of the Pure Oil Co.'s Toledo refinery during the past winter

J. H. RAYMAKER was recently appointed manager of the National Transit Co. at Oil City, Pa. Under his direction an ambitious program of expansion of the plant there is being carried on. This work includes a large extension of the plant buildings, floor space, manufacturing equipment, and personnel of the company.

According to company officials this expansion is necessitated by the increased output necessary to keep up with business, and the extension of the different lines of products which the company is manufacturing. It will be recalled that announcement was made some time ago that this company is furnishing the special gas engine-oil pump assemblies with which the new co-operative Dubbs cracking unit at the Pennzoil refinery is equipped. A detailed article on this unit will be published in NATIONAL PETROLEUM NEWS some time this spring.

* * *

COL. GEORGE A. BURRELL, who has been for some months in Russia on the second phase of his work of reorganizing and rebuilding the natural gasoline industry of that country, is reported to be expected back in the United States probably in April or May. A large building program is being carried out by the Soviet government following the lines of the best American practice, and when completed the industry in Russia will have been entirely revamped.

* * *

KENDALL REFINING CO., at Bradford, Pa., is now installing a vapor recovery plant designed by the Burrell-Mase Engineering Co. of Pittsburgh, with a capacity of 3000 gallons of gasoline per day. It is stated by officials that this plant is being built to oversize capacity, in order to care for future increases in the amount gas to be handled at this plant.

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Atlantic Refining and Employes Feed 2100 Unemployed Per Week

PHILADELPHIA

FEEDING 2100 people per week during the lean winter just passing is an accomplishment of the Atlantic Refining Co. and its co-operating employes since about the first of the year.

Philadelphia, like all other American cities, has had a large group of unemployed during the last few months; several refineries in the locality were forced to discharge considerable numbers of men. Many of these families whose heads were out of work soon were in want for food and clothing. Some of them applied to Atlantic employes and officials for aid, either in the form of work or as food for the hungry. Local charitable organizations also made requests for donations from company and employes.

It was suggested that company workers be permitted to contribute money, food, etc., for the support of the needy, and that the distribution be handled from the plant under the direction of the plant personnel. The idea was communicated to the plant force, and contributions began to come in with a rush, in every conceivable form.

A room in the plant office building was set aside to store food and clothing contributed, with a company employe in charge. Contributed funds were handled by the same organization and used to purchase food downtown.

In order to check over the needs of ex-employes and others in need, the company employed three visiting nurses. These nurses determine the status of the family and recommend the necessary action by the organization. Medical attention, special foods for children, extra clothing and other necessary aid is ordered by the nurses. The amount of food and other necessaries dispensed has become so great that two men are required to arrange it in boxes.

By pooling contributions it has been possible to buy staple foods in large quantities at a low cost. Wholesale merchants in the city became interested and made "rockbottom" prices for foods. Some clothing merchants have made large contributions of clothing and shoes while others gave orders for a definite amount of clothing to be called for by recipients.

H. M. Nichols, plant manager of the Atlantic Refining Co.'s Philadelphia refinery, has been in the employ of that company since 1904. Begining as timekeeper, through the machine shop, the lubricating oil plant, he has worked at every phase of refining oils during the last quarter of a century. In 1921 he was promoted to his present position from that of assistant manager which he had previously held

Boxes of food, based on family size are filled with bread, butter, potatoes, rice, coffee, sugar and other staples, calculated to provide a balanced ration for that number of persons for a definite period, usually one week. Persons needing clothing may call and look over the available supply, or take the matter up with the visiting nurses. Average weight of boxes is about 65 lbs.

By March 1 more than 3700 of these boxes of food had been delivered. At that time 70 baskets were being sent out daily. Employes of the company and others had contributed about $15,000 to the fund.

The company pays the salaries of the nurses and the men in the distributing room. About three-fourths of the time of the company steward, who operates the plant cafeterias, is devoted to purchase of food, in planning the contents of baskets, and in keeping a strict accounting of everything handled.

In addition the company is donating the entire time of one man to the work of downtown charitable organizations. It was estimated that the direct donations of the company in these matters was in excess of $5000 on March 1.

According to H. M. Nichols, plant manager who has been active in planning and directing this work, the co-operation of the contributing employes on one hand, and that of merchants in furnishing staple materials at the lowest possible prices, that have made so extensive a program possible. He particularly called attention to the fact that all the food handled is first grade and not old or sub-standard goods.

"All this food is as fresh as when we buy it for our own use in the grocery," he added, "no stale food of any sort is hanled or accepted, the people receiving these boxes get as good food as can be bought. Butter is fresh, so is the bread, canned fruits and vegetables are standard brands in prime condition, no 'second' and no damaged stuff."

New Refining Patents

Mercury Vapor Device for Cracking Oils. U. S. P. 1 786 315 Dec. 23, 1930, application filed Feb. 24, 1926; Arthur E. Pew. Jr. and Henry Thomas, Assignors to Sun Oil Co.

IN ORDER to take advantage of the fact that coking temperature of oils is considerably higher than cracking temperature, a heat exchange system utilizing mercury vapor has been developed. This makes it possible to avoid the local overheating which occurs in direct heating of oils with hot combustion gases, and which is the cause of coking. At the same time, it permits a temperature gradient which is large enough to give the heat economy which is necessary for profitable cracking operations.

It has also been found that, while asphaltenes resembling coke are ultimately formed in the improved process, these asphaltenes differ from coke in that they are readily soluble, so that pipes in which asphaltene has accumulated can be easily cleaned by pumping a solvent through the system. Thus there is little or no heat wasted in coking, and none lost due to heat insulation of an accumulated coke layer. Accurate control of the rate of heat transfer is also facilitated by the use of mercury vapor.

What is Claimed

Cracking oil by flowing it continuously into a cracking zone and thence through a second cracking zone and back into the first zone, flowing mercury vapor into heating relation with the second zone to condense the mercury and crack the heavier components and continue the cracking in the first zone, and continuously removing vapor from the first zone for fractionation.

* * *

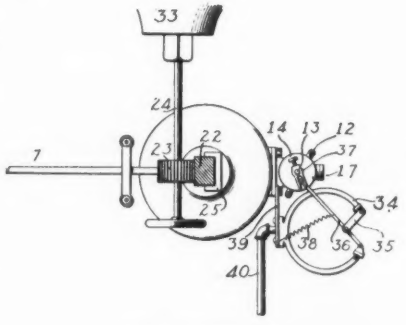
Pressure Control in Cracking. U. S. P. 1 785 807, Dec, 23 1930, application filed Aug. 3, 1927; Theodore H. Carpenter, Assignor to Gulf Refining Co.

THIS invention relates to an improved pressure control device for regulating automatically the pressure in cracking oils and in like operations. The new regulator maintains pressure within less than 1 pound, and the frequency of variation is of the order of twice a day, whereas previous regulators have been sensitive only to within about 5 pounds, with variations occurring as often as 10 to 20 times per hour.

The improvement comprises a pilot valve and its parts, as shown in the drawing; operating fluid is admitted through inlet 16 to the pilot valve 14, which operates to control ports 19 and 20. A drain connection is provided at 17. The actuating fluid, entering or leaving the cylinder 18, traverses ports 19 and 20 and motion of the piston 15 passes through the piston rod 21 and rack 22 to the pinion 23 mounted on the stem 24 of the main controlling valve 33. In operation, a high pressure water connection is made to inlet 16, the outlet 17 being connected to a drain. Any change in pressure in the system actuates the sensitive pilot valve, which in turn operates the main pressure regulator. Thus the advantages of close pressure control are utilized to the fullest extent.

What is Claimed

A delicately responsive valve having a movable closure piece, a valve stem attached thereto, and a Bourdon element communicating with a pulsating pressure and means to translate its motion into oscillatiton of the valve stem.



Chemical Petroleum Derivatives. U. S. P. 1 790 517 and 1 790 523, Jan. 27, 1931, application filed Feb. 24, 1925; divided and application for 1 790 523 filed March 28, 1930; filed in Germay Feb. 23, 1926; Harold S. Davis and Wallace J. Murray; 1 790 518, Jan. 27, 1931, application filed July 13, 1925; Harold S. Davis; 1 790 519 and 1 790 520, Jan. 27, 1931, applications filed Oct. 28, 1925, and renewed June 13, 1930; Harold S. Davis; 1 790 521, Jan. 27, 1931, application filed Jan. 4, 1927; Harold S. Davis and Charles G. Harford; 1 970 522, Jan. 27, 1931, application filed Feb. 24, 1927 and in Germany Feb. 23, 1926; Harold S. Davis and Wallace J. Murray; all assigned to Petroleum Chemical Corp.

IN THESE related inventions, a contribution is made to the chemical utilization of the olefines formed in cracking hydrocarbons. Improved methods of esterification with acids are provided, and the esters are produced for use as such or for conversion, by hydrolysis, to valuable alcohols.

In 1 790 517, the butylene and amylene fractions from a cracking process are esterified with sulfuric acid under prescribed conditions which are a part of the invention. This patent is directed specifically to production of secondary butyl alcohol; 1 790 523, originally filed as part of the same application, specifically covers production of secondary amyl alcohol.

The principal novel feature of 1 790 518 is the selective conversion of the iso-olefines to tertiary alcohols, with minimum acid consumption, by treatment with sulfuric acid under suitably controlled conditions. Tertiary butyl alcohol is specified, with the secondary butyl alcohol as a by-product.

In 1 790 519, mixed olefines are separated and selectively recovered by absorption in an aqueous halogen acid and separation of the reaction products. This method depends on the selective addition of hydrogen halides to the double bond in the olefine molecule. The alkyl halides thus formed are used for production of the corresponding alcohols. The companion patent to 1 790 519 is 1 790 520, in which selective hydrohalogenation is also a feature. It is applied under such conditions that the tertiary olefines add hydrogen halide and are removed as alkyl halides; the remaining secondary olefines are then esterified with sulfuric acid for hydrolysis to secondary alcohols.

In 1 790 521 the secondary olefines, remaining after selective removal of the tetiary olefines by hydrohalogenation, are converted to acetates, e. g, butyl acetate, by esterification with acetic acid in presence of sulfuric acid or other catalyst, under improved conditions which permit important operating economies.

Isolation of the olefine fraction from the products of cracking operations is the specific contribution of 1 790 522 in the improved system of chemical utilization of petroleum olefines.

What is Claimed

1 790 517 and 1 790 523: In making secondary alcohols from cracked petroleum hydrocarbon mixtures containing at least 30% of olefines, fractionating to separate a fraction in which the secondary and tertiary butylenes and/or amylenes predominate, selectively removing the tertiary olefines, and sulfating the remaining secondary olefines with sulfuric acid under suitable conditions.

1 790 518: Converting butylenes of cracked petroleum into secondary and

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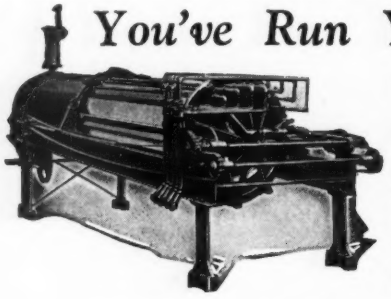

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tertiary alcohols by absorbing the butylenes under pressure in liquid olefines boiling below 100°C. and treating under pressure with 65% sulfuric acid below 30°C., and then with 70% sulfuric acid at 35-45°C.

1 790 519-20: Segregation and several recovery of secondary and tertiary olefines by hydrohalogenation in cold aqueous hydrogen halide, fractionating to separate the secondary and tertiary derivatives, and sulfating the secondary olefines with sulfuric acid (70-77%).

1 790 521: Esterifying secondary olefines in a mixture of cracked petroleum hydrocarbons, by selectively removing the tertiary olefines from the mixture and admixing the remaining hydrocarbons with acetic acid and a catalyst.

1 790 522: The olefine fraction of cracked hydrocarbons, containing more than 80% of unsaturated hydrocarbons including amylenes and butylenes, and substantially free of hydrocarbons of lower molecular weight than propylene.

* * *

Cracked Gasoline. U. S. P. 1 791 113, Feb. 3, 1931, application filed Feb. 25, 1926; David G. Brandt, Assignor to Doherty Research Co.

IN AN improved process for making a blended gasoline direct from the hot vapors from a cracking operation, the vapors are subjected to a 3-stage condensation process at successively decreasing temperatures. The last (lowest) temperature is as low as is permitted by the cooling medium and by atmospheric conditions. The first (highest) temperature is preferably about 250° F., and the middle stage is carried on at about 150° F. The condensates from each of the first two stages are separately cooled, out of contact with the vapors, to prevent escape of dissolved lighter components. To recover volatile gasoline components from the tail gas, the gas is scrubbed with the cooled condensate from the first stage, and the distillates are blended to form the finished gasoline.

If preferred, the last condensation may be carried on under a pressure (preferably about 50 lb. per sq. in.) such that the tail gas will be sufficiently dry so that scrubbing will be unnecessary. In blending the condensates, the middle condensate is introduced below the liquid level formed by the first condensate, and the last condensate is introduced above this liquid level.

This method has the advantage of effecting condensation with a minimum of cooling water. It also produces a finished gasoline without the necessity of weathering, and recovers all the

gasoline from the tail gas without requiring a separate operation for this purpose.

What is Claimed

Producing stable gasoline from vapors from a cracking unit, by passage through 3 condensing zones, under a pressure of 50 lb. per sq. in., first at about 250° F., second at about 150°F., and finally at about normal atmospheric temperature, whereby condensation of the lower boiling components is prevented until the last stage, cooling the first two condensates out of contact with the remaining vapors, and mixing the cooled condensate with the condensate from the last zone, while maintaining the pressure.

* * *

Pressure Cracking. U. S. P. 1 791 114, Feb. 3, 1931, application filed May 3, 1927; David G. Brandt, Assignor to Doherty Research Co.

IN ORDER to obtain the advantages of indirect heating of heavy oil for cracking, at a low operating cost, a system is provided in which reflux condensate is used as the heating medium, and the amount of reflux condensate produced is subject to control by adjusting the amount of oil vaporized in the cracking chamber.

These objects are accomplished by preheating the charging oil and passing it to a cracking chamber where it is heated by contact with vapors and oil from highly heated reflux condensate and residuum distillate, which have been independently heated in a separate pipe still furnace. Control of the amount of reflux condensate produced is effected by supplying a regulated amount of gas along with the reflux or residuum distillate being passed to the furnace.

Carbon deposition is minimized by taking advantage of the fact that fixed gas is a product of the reaction which forms carbon; by returning fixed gas to the system, the equilibrium is shifted (in accordance with the law of mass action) in the direction of minimum carbon formation.

What is Claimed

Cracking oils under pressure by passing charging stock in heat exchange relation, but not in contact with oil vapors in a dephlegmator to produce a reflux condensate, passing this condensate through a heater under pressure to produce highly heated oil and vapors, separating the oil and vapors in a separating zone, passing the highly heated vapors under pressure into oil to crack the oil, withdrawing residuum therefrom and distilling it, independently heating the distillate under pressure to a high temperature and passing it into the separating zone.

New Patents

Prepared by R. E. Burnham, patent and trade-mark attorney, 1343 H Street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 20c each. State number of patent and name of inventor when ordering.

February 24, 1931

REFINING

Tank for cracking mineral oil—Arthur E. Pew, Jr., Bryn Mawr, and Henry Thomas, Ridley Park, Pa., assignors to Sun Oil Co., Philadelphia, Pa. No. 1,794,200.

PRODUCTION

Derrick-leg with reenforcing member—Lyman K. Stafford, Los Angeles, Calif., assignor to Emsco Derrick & Equipment Co., same place. No. 1,793,525.

Roller-core drill—Louis H. Wellensiek, Houston, Tex., assignor to Hughes Tool Co., same place. No. 1,793,533.

Check-valve for drill-stems—Ellsworth Gray, Houston, Tex. No. 1,793,547.

Pump-jack construction—Thomas M. Tuttle, Mounds, Okla. No. 1,793,570.

Tubing check-valve—Albert B. von linde, Torrance, Calif. No. 1,793,572.

Swab for tapered tubing—August L. Segelhurst and Hugh S. Berkey, Huntington Beach, Calif. No. 1,793,644.

Automatic well-flowing device—Alexander Boynton, San Antonio, Tex. No. 1,793,671.

Rod-line stretcher for oil-pumping mechanism—Harry Spooner, Stephens, Ark. No. 1,793,758.

Well-flowing apparatus—Jesse E. B. Daniel, Los Angeles, Calif. No. 1,793,780.

Deep-well fluid-actuated pump—Paul H. Granger, Los Angeles, Calif. No. 1,793,793.

Well boring, spudding, and baling apparatus—Gregg E. Sawyer and John W. Smith, Independence, Kans. No. 1,793,872.

Formation direction indicator—Reuben C. Baker, Coalinga, Calif., assignor to Baker Oil Tools, Inc., Huntington Park, Calif. No. 1,793,894.

Non-plugging coupling, for rotary drills—Benjamin E. Parrish, San Luis Potosi, and Frank Baquet, Tampa, Mexico. No. 1,793,958.

Expansive rotary underreamer—James T. Barkelew, Pasadena, Calif. No. 1,793,988.

Control mechanism for rotary drill-pipes—Gustavus A. Montgomery, Dallas, Tex. No. 1,794,196.

Overshot for well fishing—Elwin W. Forrow, Los Angeles, Calif. No. 1,794,226.

Double-tapered slip for rotary well-drilling rigs—Lee J. Black, Beaumont, Tex. No. 1,794,273.

March 3, 1931

REFINING

Method of operating oil-stills—Benjamin Broido, New York, N. Y., assignor to Superheater Co., same place. No. 1,794,439.

Process of revivifying spent adsorbent materials (Fuller's earth)—Robert C. Palmer and John L. Burda, Pensacola, Fla. No. 1,794,538.

Process of revivifying adsorbent material—Robert C. Palmer, Pensacola, Fla. No. 1,794,539.

Distilling hydrocarbons—Emil Piron, New York, N. Y. No. 1,794,542.

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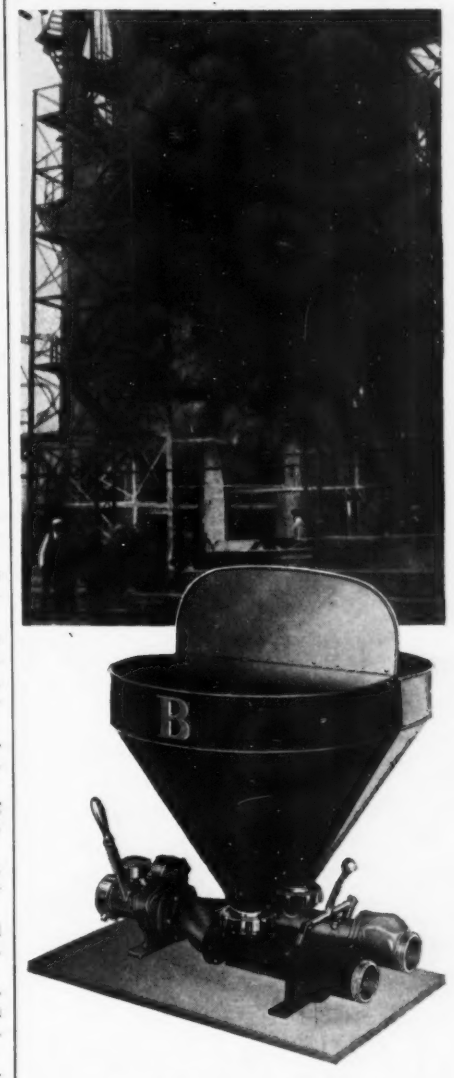

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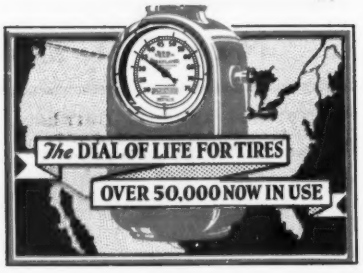

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TIRE *Measure Air*

ADVERTISING PAGES REMOVED

The Swayne Latham one-stop service station, Union at Cleveland, in Memphis, Tenn.

Commercial Customers Store Tubes At One-Stop Station

By E. L. Barringer
N. P. N. STAFF WRITER

MEMPHIS, Tenn.

COMMERCIAL account customers buying tires from the Swayne Latham one-stop station, Memphis, keep their stocks of new and replacement tubes at the service station.

When a tube blows out on a truck the station service car takes out a replacement tube from the customer's private stock to put in the casing. The damaged tube is returned to the station, repaired, and put back in stock.

To handle tubes by this method a section of the station's stock room has been set aside for customer storage. The tubes are kept in wooden bins, and each customer has as many as necessary for his stock. Tubes are folded, much as they come in the original box, labeled, and placed in the bins.

This method of handling tubes reduces the customer's investment in rubber. In place of having a spare tire on each truck the customer maintains a stock of a few tires for each size at the station.

An example cited by Mr. Latham illustrates the point. A customer has a fleet of ten trucks, all tires of the same size. Normally there would be the five tires for each truck. With this method the customer has only the four tires on each truck. At the station he would have about two tubes.

These tubes at the station would be replacements when any tire on the trucks blew out. As the tubes became worn the two extra tubes would be replaced. In all, this customer would have 40 casings and 42 tubes in place of the 50 casings and tubes.

The station cleans house about every six months on the customer's tube storage. Tubes beyond use are junked. The customer is notified to check these off his record.

On the surface the system would seem to be loose. Very few customers ever check their property at the station. The station's check is accepted without question. The check on the station, as Mr. Latham points out, is the tire cost, and if a customer believes his bills are running too high he is apt to take his account to another tire dealer.

Customers using regular tubes seldom send their trucks to the station. Mechanics inspect and repair the trucks. Gasoline is purchased through oil company stations or the fleet owner has his own supply at the company garage. So outside of battery service there is no need for the truck coming to the one-stop station.

About 90 per cent of the Swayne Latham station's commercial business on tires is served by the service truck.

Commercial customers using air container tubes are asked to send in their trucks every two weeks. With air container tubes the station guarantees

This instrument helps sell tires. It records the weight on the tire. The reading is checked on a chart that shows the proper size tire for that load

that there will be no charge for repairing tubes for 18 months. The fortnightly visit of trucks is to inspect the tires and pull out the nails.

This inspection also is turned to good use in merchandising. Since the air containers cost about five times the price of regular tubes the station desires to impress upon the customer that he is free from tube trouble. Occasionally the nails, tacks, and bits of glass removed from the tubes are put in a sack and sent to the customer, through the driver, with the station's compliments.

By having the commercial account customer keep his tube stock at the station, and using the service car, the station has been able to give more consideration in its location to the individual car owner customer. And the individual car owner business is the backbone of the car washing, greasing, and gasoline business at the station.

Most one-stop service stations favor a location near the retail business district to serve the commercial account customer. Since the Latham station, for 90 per cent of its commercial account tire business, is taken to the customer there has been no need to locate downtown.

Memphis is so laid out that the city spreads in three directions from the retail shopping district. The Mississippi river has cut off development to the west. Consequently the Latham station is in the center of the city, yet it is out in a residential section. This location saves as much as 10 minutes on some tire service calls over being in the border zone of the business section.

In merchandising to the individual car owner the Latham station has found the interior of the station of little value. The display windows provide merchandising value in that the customer can see the goods while seated in his car on the drive, but only about once a month a tire will be sold in the station proper.

All of the servicing is done out in front under the canopy, and the canopies are big in Memphis.

"I believe the customer resents being taken into an indoor service room," said Mr. Latham, in explaining the big canopy. "Once you get him past the door he is suspicious that you are going to try and sell him. But out in front everything is open and the customer is not so conscious of being sold."

Special sales effort has been tried on the individual car owner customer but Mr. Latham believes the additional profit is almost offset by the additional sales expense.

One of the specials was a free greasing job with every crankcase drain. A favorable purchase was made on a certain brand of motor oil. So this oil was used as a trade puller.

Another special offering was on tires. For a month the station's newspaper advertising was concentrated on a combination of a free tube with the purchase of a casing at list price. Actually the customer had no advantage since the difference between list and regular price would have purchased the tube.

In support of the advertising one of the city salesman was brought into the station. He approached the customers suggesting the purchase of the tire special.

The usual class of "floater" customers was attracted by the offerings and the specials did not materially increase profits.

Instead of sales people to greet the customers out in front the station employs inexpensive labor, capable of courteously waiting on the trade.

The sale of special accessories has been tried also. This was a cane seat cover for the auto. The covers were strung up across the front of the station to be taken as "desired" merchandise.

This merchandising was partially successful but ran into competition from auto accessory chain stores that were selling the covers for less than the one-stop station had paid for them.

Development of this type of merchandise will have to come through an arrangement of group purchasing whereby the individual one-stop station can have the advantage of large scale buying, Mr. Latham believes.

During 1928 Colombia exported 15,100,000 barrels of crude oil to the United States and 1,505,500 barrels to Canada, out of a total of 17,566,500 barrels.

ADVERTISING PAGES REMOVED

Name Your Own Price on Gasoline At Stations in the South

By E. L. Barringer
N. P. N. STAFF WRITER

BIRMINGHAM, Ala.

THE retail gasoline price structure in the Southeastern states is, to borrow a favorite phrase from a popular radio pair, "in a mess."

It is a real buyer's market. The established service station price functions mainly as the base from which the discount is figured. Actually the buyer, both the truck and the individual car owner, can buy gasoline of major oil company brands 2 to 3 cents below the posted price without too much inconvenience.

A panorama view of the price structure shows the reductions falling into three general classifications.

The most noticeable are the stations bordering cities, and out in the country. At these places the cut price is advertised by large signs placed along the highway by the drives. The price is 2 to 3 cents below the established retail market. The gasoline is of major oil company brands, sold through the pumps and with the globes and signs of the supplying company.

In the larger cities through Alabama there are the bulk service stations selling their own brands of gasoline at a price generally 2 cents below the market. Some of the local jobbers, moving gasoline from a central bulk plant to stations, also are selling at 2 cents less. In Birmingham, for instance, 14 stations of both types selling openly at 2 cents under the market, do about 6 per cent of the city's gasoline business.

Then in the cities major oil company brands of gasoline are being sold quietly through dealer stations at reduced prices. Most of these stations post the full price, but the cautious customer can get 2 cents off on gasoline and 5 cents a quart off on motor oil by exercising his ability to bargain.

Causes for this varied price structure given by oil men are the commercial discount at service stations, and the courtesy card charge account system.

A secondary cause in some sections is the uneven tax structure, in regard to the gasoline tax, and license fees. Alabama has a 4 cent state gasoline tax, and on top of this three counties impose a further tax of 3 cents, and 108 towns and municipalities have a tax of 1 to 2 cents. Then some cities have a local license fee, in addition to the state and county levy, which makes a natural unevenness between urban and rural price structures. But the commercial discount and courtesy card loom as the worst offenders among oil men.

THE commercial discount started as a reduction to users of large quantities of gasoline. This reduction of 2 cents was given at the station on charge accounts to customers having approved ratings and with one or more vehicles carrying commercial licenses.

The discount has spread to include individual car owners, oil men say, on the thinnest pretext that they are connected with some industry. In order to compete in the disrupted market dealers have turned to cutting the price quietly, and so the discount spreads over more consumers.

An established jobber gives this word picture of the price structure:

A truck driver pulls into a dealer service station and asks the price of gasoline. When the operator quotes the prevailing market the driver berates him, claiming he can buy the same grade of gasoline at the major company operated stations at 2 cents less. Furthermore he can charge it and stall along on paying the bill.

The operator knows that the driver's claims are true about buying the same grade of gasoline cheaper. The operator knows also that he has a margin of 4 cents a gallon, so rather than miss a sale he will divide with the truck driver.

IN A short time the discount gets noised about the community and soon the individual car owner wonders why he should pay the full price, especially if he pays cash, when a rattle trap truck gets a 2 cent discount and possibly some credit. The operator in some cases helps the cause along by tipping off a few friends that he will sell them at a discount.

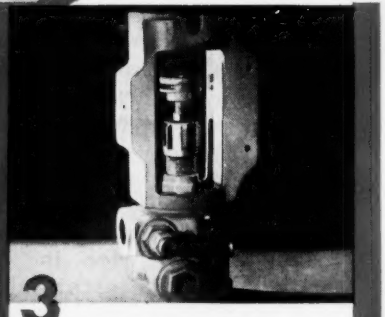
The courtesy card is ranked by oil men next to the retail commercial discount as a market disturber.

In competing with the courtesy card the dealer turns to extending his own credit with a 2-cent reduction on gasoline and 5 cents a quart on motor oil.

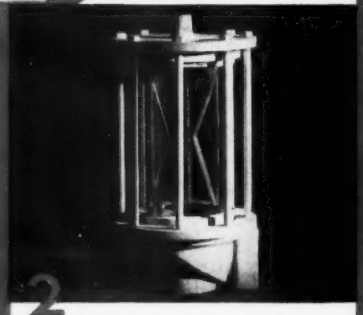
Oil men point out that the maintenance on courtesy cards involve heavy accounting expense: purchases are cleared through the home address of the customer, and then there is the weekly reports to company stations announcing serial numbers on cards lost or on accounts having the credit withdrawn. In some cases the accounts receivable on courtesy cards is presumed to run into

6 GREAT, NEW FEATURES IN THE G&B TRU-METER

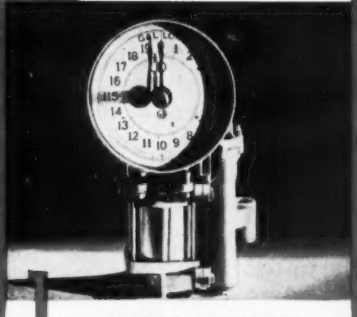
POSITIVE PISTON DISPLACEMENT PUMP



3 *TRU*-METER SPEED AND DURABILITY—Insured by a new corrosion-resisting pump with wearing parts of hardest steel surface—Nitrided steel.

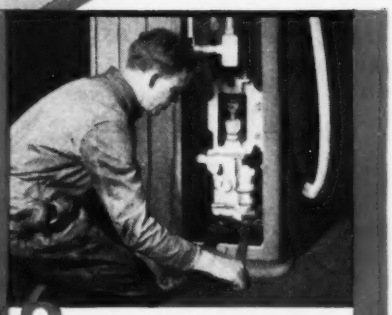


2 *TRU*-METER AIR-FREE VISIBILITY—New type vortex-flow visible indicator automatically clears itself of all air the moment nozzle is opened.

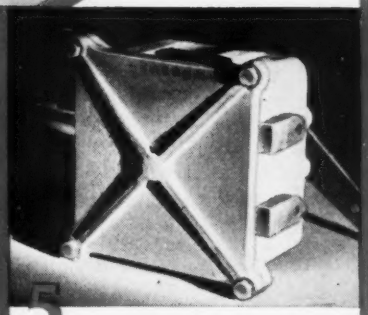


TRU-METER ACCURACY—Guaranteed and maintained by a positive piston displacement meter, designed and patented by G & B engineers.

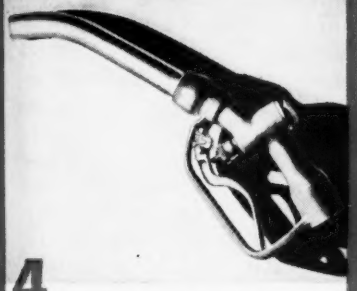
Send coupon for *TRU*-METER booklet



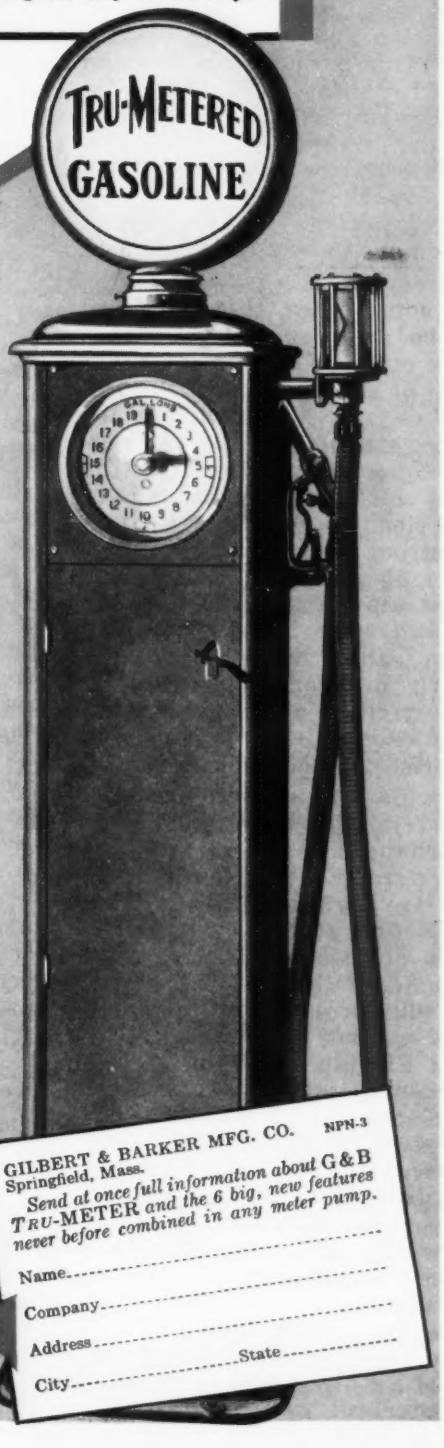
6 *TRU*-METER STRENGTH AND ACCESSIBILITY—Rigid, non-vibrating construction with new demountable, panel-type housing for easy accessibility.



5 *TRU*-METER ABSOLUTE SAFETY—A new explosion-proof automatic overload switch eliminates hazards and prevents burned-out motors.



4 *TRU*-METER SMOOTH CONTROL—From full flow to a trickle, by means of a new, exclusive, patented "non-chattering" type nozzle.



NO OTHER METER PUMP CAN OFFER YOU ALL THESE FEATURES

GILBERT AND BARKER

MANUFACTURING COMPANY
SPRINGFIELD MASS., U. S. A.
PUMPS AND TANKS FOR THE OIL TRADE

TRADE MARK G&B

GILBERT & BARKER MFG. CO. NPN-3
Springfield, Mass.

Send at once full information about G&B TRU-METER and the 6 big, new features never before combined in any meter pump.

Name_____

Company_____

Address_____

City_____ State_____

the tens of thousands of dollars, even in smaller cities.

A jobber with four drive-in stations in a larger city of the South has openly reduced his posted price 2 cents on account of credits.

"My price is 2 cents less as a concession for cash," he said. "We are in business to make a profit, and we know that extending credit increases overhead. So I don't have extra office help to work on credit accounts and I don't have to set up a reserve for bad debts."

The difference in price structure is most noticeable between the cities and rural communities. This is on account of the cut price signs displayed along the highways. Through the city stations will be seen posting the established market, but as soon as the corporate limits are reached the same gasoline brands are on sale at a reduced price.

In some cities, though, there will be an open difference between stations selling the same brand of gasoline. A moderate sized city in Alabama, for instance, has such a case. A company operated station of this major oil company posts the full price. A few blocks down the street is a dealer buying the same gasoline in tank car lots at his station. The dealer has the same globes on his pumps, and the curb sign is slightly different from that of the company operated station to indicate a dealer outlet, but the price is 2 cents less.

Florida would seem to be a state relatively free from price disturbances. On account of its geographic position freight rates are high, and all its gasoline is brought in by tankers. A few private brands are seen in Jacksonville, but this gasoline was brought in by some major oil company tankers.

Yet Florida has its price differences as much as Alabama, and Georgia. The main highway west of Jacksonville, for instance, is lined for several miles with cut price stations. Some of the pumps have blind globes, but most of them advertise brands of the major companies.

The average drive-in station in Florida sells about 3000 gallons of gasoline and 30 gallons of motor oil in a month. A country dealer station doing 1500 gallons a month is doing exceptionally well.

In Alabama the difference in taxes and license fees between urban and rural communities causes a difference in the posted price structure. Where a city imposes a gasoline tax in addition to the state levy its posted price is just that much higher than in the surrounding rural section. And the privilege to sell gasoline and oil in the city also costs more than in the country. Separate licenses are required also to sell accessories, tires, batteries, and car washing in some districts.

One Alabama jobber, with a small business in one of the larger cities, pays $1500 a year in licenses. His banker pays only $150 a year and the bakeries in his city have annual licenses of $75.

Another jobber points out that his pump license is $50.60 a year for the state and county. On top of this the city levies an additional $35 a pump for a license. The city also taxes each station retailing lubricating oil $25 a year.

In spite of varied retail price structure, helped by the oil industry's marketing policies and by uneven taxing and licensing the roadside station selling at cut prices does better than the tourist anticipates. A commission agent for a major company sums it up this way:

"On account of the local city tax my tank wagon price in town is 1 cent higher than in the country. Then these country stations think they have but little overhead so they cut their price about 2 cents. That makes the city service station price 21 cents, and the country price 18 cents.

"The tourist is skeptical about that 18 cent price. The gasoline signs make it known that it is advertised brand goods, but the tourist thinks something is wrong so he buys in town at the higher price.

"Our local people know about the difference in taxes and these cut price country stations get a lot of business from the city folks. So the stranger stops in town for gasoline and the local people drive to the country to buy."

NEW EQUIPMENT

Trucks Built to Haul Cheaper

LOW cost per mile haulage and higher efficiency are two important features of its 1931 model trucks, according to Willys-Overland, Inc., Toledo.

A ½-ton and 1½-ton commercial chassis have been developed. Model C-113, the ½-ton unit, has a wheelbase of 113 inches, is powered by a 65-horsepower engine, and sells at $395. Model C-131, the 1½-ton unit, has a wheelbase of 131 inches, and sells at $595, f.o.b. Toledo.

Frames are of double-drop type, held rigid by rugged cross members, and designed primarily to lower costs and increase transportation efficiency.

The 1½-ton truck is designed with a dump body which is equipped with hand, gravity, mechanical power and hydraulic hoists. The body is 10-gauge steel, electrically welded. The chassis with stake body has an ironed floor with double side rails.

* * *

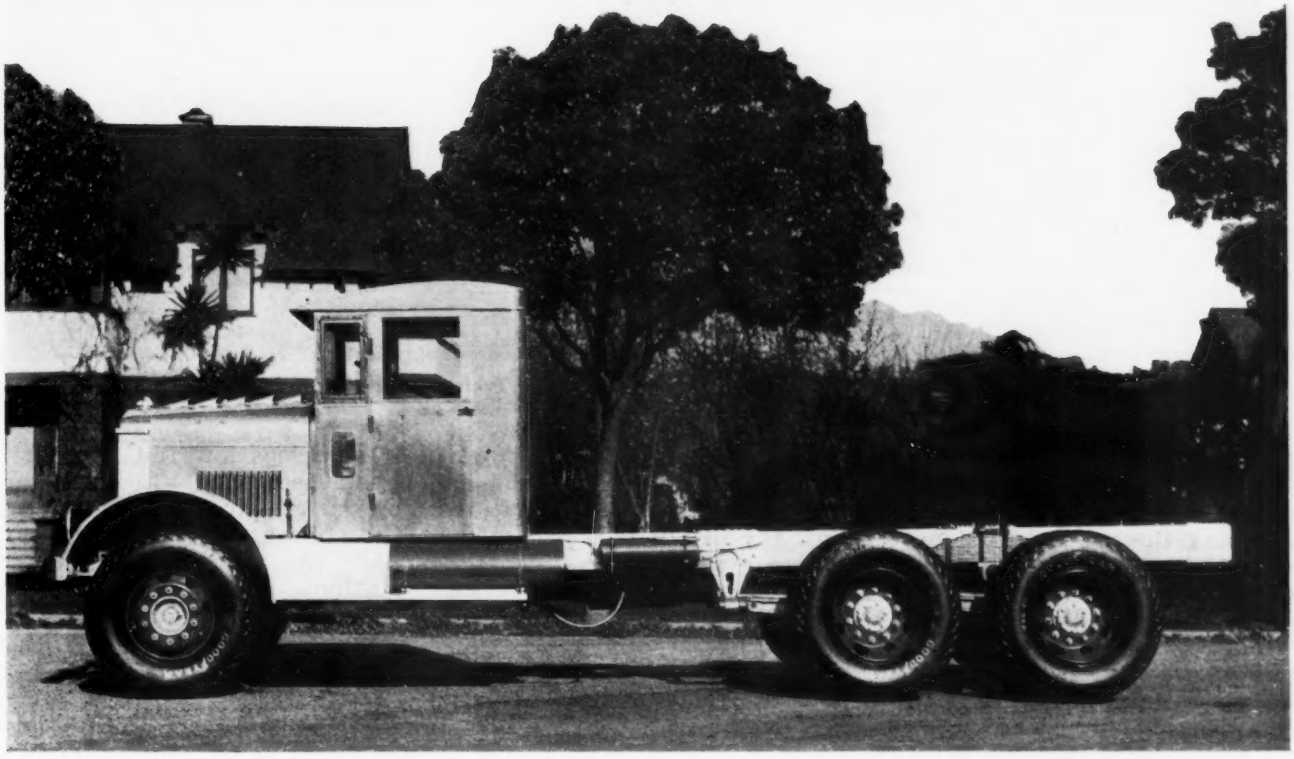
2 to 8-Ton Pierce Arrow Trucks

A COMPLETE new line of medium and heavy duty trucks was introduced by Pierce-Arrow at the New York Automobile Show early in January. These new units include five models rated as follows:

Model	Gross Weight Rating (Lbs.)	Capacity for Licensing
PT	12,000	2-ton
PW	18,000	3-ton
PX	24,000	4-ton
PY	28,000	5-ton
PZ	34,000	8-ton

Engines throughout are six-cylinder L-head type, Pierce-Arrow design, of medium speed and ample power. Dual ignition is used in all except the smallest unit. Fuel, oil and air filters render the engines dirt-proof.

All models are fitted with power brakes, Westinghouse air brake equipment and worm drive (pioneered over 20 years by Pierce-Arrow), are standard equipment on all except model PT, which has BK booster power brakes and bevel drive rear axle.



A 6-wheel aluminum truck chassis recently introduced on the Pacific Coast by Fageol Motor Co.

California Haulers Experiment With Aluminum Tank Wagons

LOS ANGELES

ALTHOUGH transportation heads of Pacific Coast oil companies maintain a noncommittal attitude on the possibilities of aluminum construction for tanks, flat beds and even the chassis of their automotive fleets, they are watching with considerable interest experiments being made in this direction by several commercial trucking companies in California.

Ordinances, local to various congested areas, while not prohibiting the use of aluminum usually dictate a 10 gauge steel for tank construction. This has held in abeyance the local development of aluminum tank wagons, but in rural areas and for transfering products from refineries to bulk terminals, the aluminum truck and trailer assemblies afford a substantial increase in pay-load.

At least two such attempts to replace steel tank construction with the lighter metal are worthy of note. The Ventura Transfer Co., operating between the coastal towns of Santa Barbara and Ventura counties, has installed a set of aluminum tanks on a truck and trailer combination.

Use of aluminum permits a total truck and trailer capacity of 7050 gallons, a combined pay-load increase of approximately 15 per cent over the average load of 6100 gallons with steel construction.

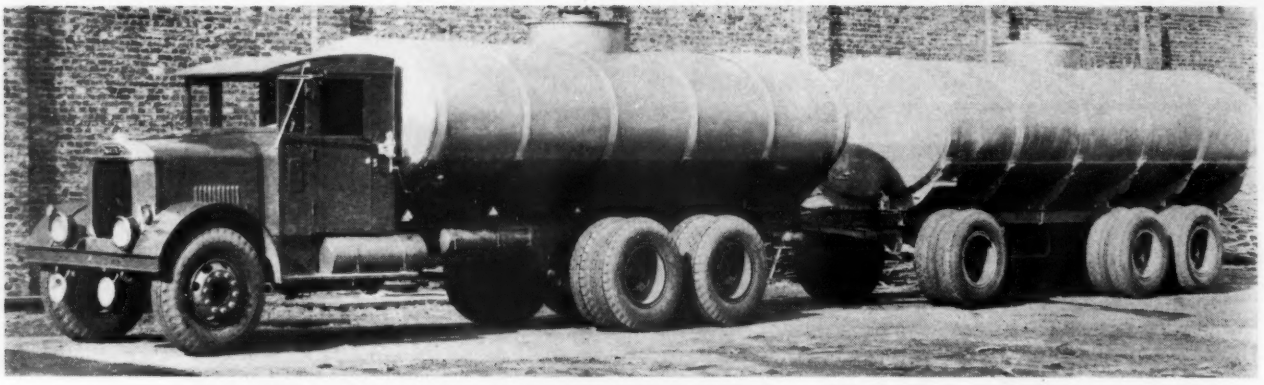
A 3975 gallon tank weighing 2700 pounds is carried on a trailer of slightly heavier than average construction. A steel tank of 3450 gallons capacity weighs about 3000 pounds.

It is not considered possible to build a steel tank of approximately 4000 gallon capacity that would be safe and still come within the California road-weight limit of 34,000 pounds on a six-wheel double pneumatic tired trailer.

An accompanying photograph shows an aluminum assembly recently added by Harm & Erasher Transport Co., Fresno, to its fleet of tankers. This unit has a total capacity of 7200 gallons, 4000 on the trailer and 3200 on the truck. It is used to pick up gasoline at a terminal in Stockton to deliver to bulk depots in the lower San Joaquin Valley towns.

Possible electrolitic action between the steel and aluminum is prevented by padding the steel supports with felt and by using aluminum straps to tie the tanks to the frame. The unit has twenty-two 38 x 9.75 tires on the ground and has considerable flexibility in operation.

A new heavy-duty aluminum



Aluminum tanks recently installed by Harm & Frasher Transport Co. for bulk deliveries

truck chassis has recently been introduced by Fageol Motors Co. as a contribution toward increasing the pay-load on motor vehicles. An accompanying photograph shows the unit.

It is claimed to offer the truck operator more pay-load per pound of truck than has been available with the steel construction. Although it weighs only about one-third as much as steel it is said to have an added factor of strength of approximately 40 per cent. The aluminum alloy used is a special formula developed by the Aluminum Co. of America.

Frame side rails on the unit are of heat-treated pressed aluminum-alloy channel with a deep aluminum fish-plate included as standard equipment. All frame cross members are constructed of this same material and amply re-enforced with aluminum gusset plates.

Axle housings and radius rods, as well as the frame castings, are made of aluminum. In all, a total saving of 1800 pounds was effected on a light six-wheel chassis having a gross weight allowance of 26,500 pounds.

A chassis for use in making large bulk deliveries of gasoline would necessitate a heavier construction that would reduce this saving appreciably, but it is expected the final increase in pay-load would exceed 10 or 15 per cent.

Book Tells About Heat

CHICAGO.—"The Story of Heat" from its primitive beginnings to the present-day oil heat is told in a booklet by that name recently put out by Stephen O. Andros, advertising counsel here.

This story tells in narrative form how fire and heat were first evolved in the myths and folk tales of ancient nations; how the fire-drill first came into use, and later flint, then matches, followed by various minerals, until coal came into use, and then oil.

The booklet has 31 pages and is pocket-size. It contrasts the cleanliness and comfort of oil for home-heating as compared with coal or other substances.

Jobber Solicits Business For Rented Stations

M A C O N, Ga.—When the Powers Oil Co. rented its service stations to operators it did not consider its part of the transaction completed merely by collecting the rent and delivering petroleum products.

Operators are assisted in moving their merchandise to the consumer, as the company realizes it makes money only when the operator prospers. Consequently this jobber is helping his operators to merchandise.

The assistance is given through salesmen who solicit business and collect accounts receivable. The general manager of the Powers Oil Co. also visits each station daily as a supervisor.

Twelve stations in Macon are controlled by the company. It was difficult to make these stations show a profit with employe attendants, so they were rented out.

The company places a flat monthly rental on each station. The amount is governed by the location and amount of business done. Licenses and operating expenses are paid by the operator. The company pays the taxes, maintains the stations, and places petroleum products on consignment.

The stations also sell other lines of automotive merchandise. Each operator selects what goods he wants to handle, and makes his purchases from supply jobbers. Most stations sell tires and accessories.

The two salesmen work under the direction of the jobbing company. About half their time is spent in direct solicitation of accounts.

When an account has been obtained by a salesman the customer decides from what station he desires to purchase. The salesman does not solicit directly for any given station. He is selling the gasoline, oil, and lubrication service of the Powers Oil Co., and directing the business generally through the operator managed service stations.

These salesmen are collectors, in which capacity they are helping the operators also.

Credit accounts were retained by the Powers Oil Co. Applications for credit are considered by the company, and it assumes the obligation for collecting on approved accounts.

The station operators honor credit accounts approved by the company. They too may grant credit, but they assume all responsibility and do their own collecting.

In addition to the salesmen and supervisor, the company carries on a general merchandising policy, with a half hour radio program each week, and with newspaper advertising.

ADVERTISING PAGES REMOVED

Merchandising and Jobbing Ideas Marketers Are Practising

By E. L. Barringer
N. P. N. STAFF WRITER

THIS winter has witnessed the formation of a number of "clubs" and other trick merchandising stunts at automotive service stations.

A garage in Georgia has found a new market for its crankcase drainings. They are sold for 10 cents a quart, the customer helping himself. Of course the customer may take a mighty big quart, but the garage figures it gets a dime instead of nothing.

The unemployment situation has caused a one-stop station operator in Mississippi to organize a "club" for car washing and greasing. Two young ladies sold memberships at $1 each, and retained the dollar. The "club" members can have their cars washed and greased for one year at a charge each time the service is rendered of $1 for either service.

This station has a regular price of $1.50 for each service. Men out of work had turned to doing this work, either at their own home or that of the customer, for whatever price they could get. To combat this inroad on customers the one-stop station resorted to the "club" idea.

The renter of an oil company station in Tennessee also has a "club" for washing and greasing. Membership is $5. The $5 stays with the station operator. Members can have their cars washed and greased over a year at 50 cents for either service each time.

The station operator figures he will break even on the car washing and greasing at this price. But he hopes to sell 1000 memberships, which would bring $5000 additional working capital into his station business.

One of the most liberal "clubs" on record is that of a one-stop station operator in Tennessee. His "club" has no dues, and for a year he has three free services to members: free road service within five miles of the station, free tire inspection, and free tube repairing. Through this inducement the operator hopes to obtain the tire purchases of the "club" members.

* * *

Overloading Light Trucks Pays, Jobber Reports

Overloading of light gasoline delivery trucks has not been harmful to his fleet, reports E. H. Simpson, jobber at Jackson, Miss. His 1½ ton trucks have 560 gallon tanks. At 25,000 to 30,000 miles Mr. Simpson trades in his trucks. He reports that repair bills have not been higher through overloading, nor has he been allowed a smaller trade in value.

* * *

Fence Helps "Sell" Country Station

A fence is used to good advantage at a station of the Whiting Oil Corp., near Roanoke, Va., to set it off from its surroundings. The result is to concentrate the tourist's attention on the station as it is clearly marked off by the fence from the fields. Both sides of the fence are used for advertising goods sold at the station.

* * *

Everybody Inspects These Stations

The Texas Co. has its traveling salesman, as well as station supervisors, inspect service stations. A card, about 8 by 10 inches, hangs in the stations, in a celluloid holder. When company representatives visit the station they record their impressions on the card.

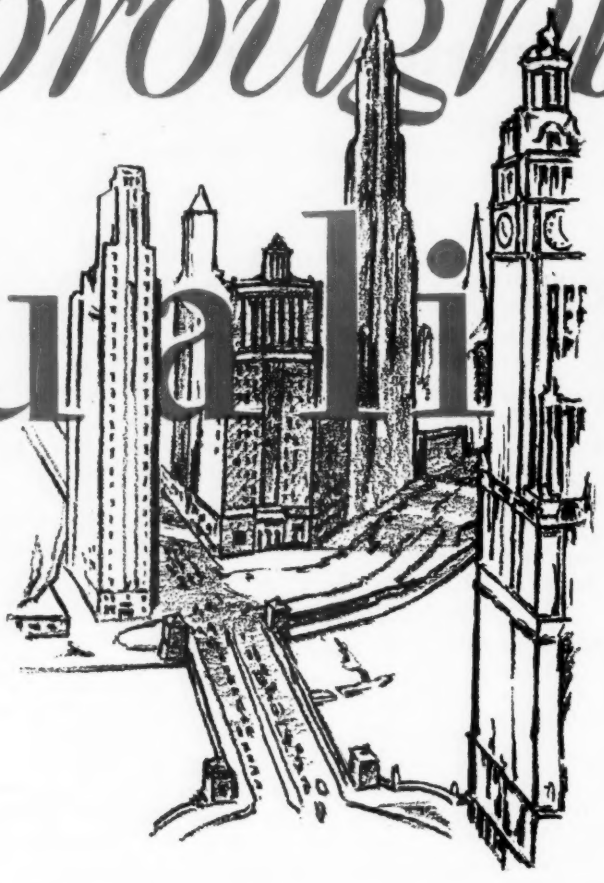
There is space for the date, name and title of the representative, and for remarks. The remarks are given as "excellent," "good," etc.

The operator of the Texaco station in Tifton, Ga., is quite proud of his card, which he keeps inside the station for the benefit of his customers. So far his card shows either excellent, or good, classification.

And the card indicates frequent inspection. The largest interval of a company representative visit is three weeks. Several times within the past few months the station has been inspected on the same date by a supervisor and a salesman.

A fence around a station helps sell its goods

Thoroughbred Quality



Wire, Write or Phone for quotations

58-60 U. S. Motor Gasoline
60-62 Better than U. S. Motor
60-62 Under 400 End Point
64-66 Under 375 " "
68-70 Under 350 " "
42-43 W. W. D. T. Kerosene
38-40 Light straw zero Distillate
32-36 Overhead uncracked Gas Oil
22-26 Straight reduced Fuel Oil
(*Cushing or Blackwell*)

Skyline appeal . . . mark of the super-craftsman in stone and steel . . . and always one building dominates the eye and mind. So it is with Cushing Petroleum Products. No need to argue—*thoroughbred quality is instantly recognized in any field.* Tie-in with this recognition, see what it means in volume and profits!

A good Trade Mark to tie up with

CUSHING REFINING & GASOLINE CO.

General Sales Office: CUSHING, OKLAHOMA
Division Sales Office: 1201 Foshay Tower, MINNEAPOLIS, MINN.

REFINERIES CUSHING & BLACKWELL OKLAHOMA

PRODUCING REFINING TRANSPORTING MARKETING

NEW EQUIPMENT

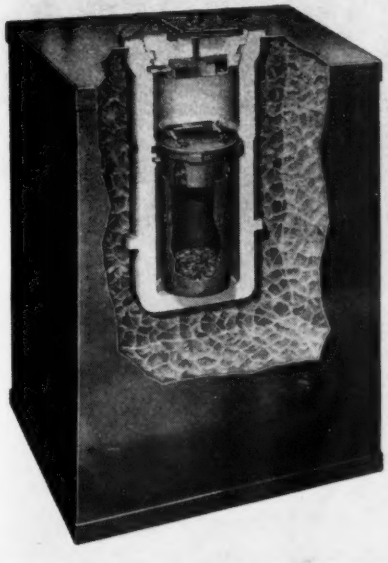
Tough Time for Burglars

A CHEST which affords protection against hold-ups and burglaries because it removes the cash on the premises from the owner's control and beyond the reach of the bandit, has been developed by the Diebold Safe & Lock Co., Canton, O.

All money as it accumulates in excess of the minimum change fund is deposited through a slot in the inner door of the chest into the money bag attached to the inner door. It remains here until the collector calls to take it to the bank. The cashier or station manager totals the accumulative deposit slip and inserts one copy in the bag through the slot in the inner door.

The cashier and collector each have a different key for the duo-control keylock on the inner door. Both must be operated simultaneously to open it. The cashier seals the bag and hands it to the collector who delivers it to the bank for checking against the cashier's deposit slip.

At night or during the hours when a service station is closed, the change fund is placed in the space between the inner and outer doors, putting all cash on the premises under burglary protection.



No. 170 Vertical Cashgard Chest protects the service station against hold-ups. By Diebold Safe & Lock Co., Canton, O.

CARE WILL SAVE YOUR CAR

"I *don't shop for bargains* . . . but this sure is one"

"After a fellow's been in this game as long as I have he finds out, by having his fingers burned a few times, that it doesn't pay to split pennies in buying equipment. The *service* you get is more important than the price you pay.

"So I was leery of the low price on this new Brookins water can. If it didn't have Brookins' name on it I wouldn't have bought it. Nothing around the place gets rougher handling than the water cans and I've found that cheap ones don't last long enough at *any* price.

"But this new Brookins can is a peach. It's made of heavy rust-proof Cop-R-Loy and galvanized after it's formed, so there are no raw seams. I don't see how they make it for the price—but that's their business. As for me, all such favors thankfully received."

—BILL.

* * *

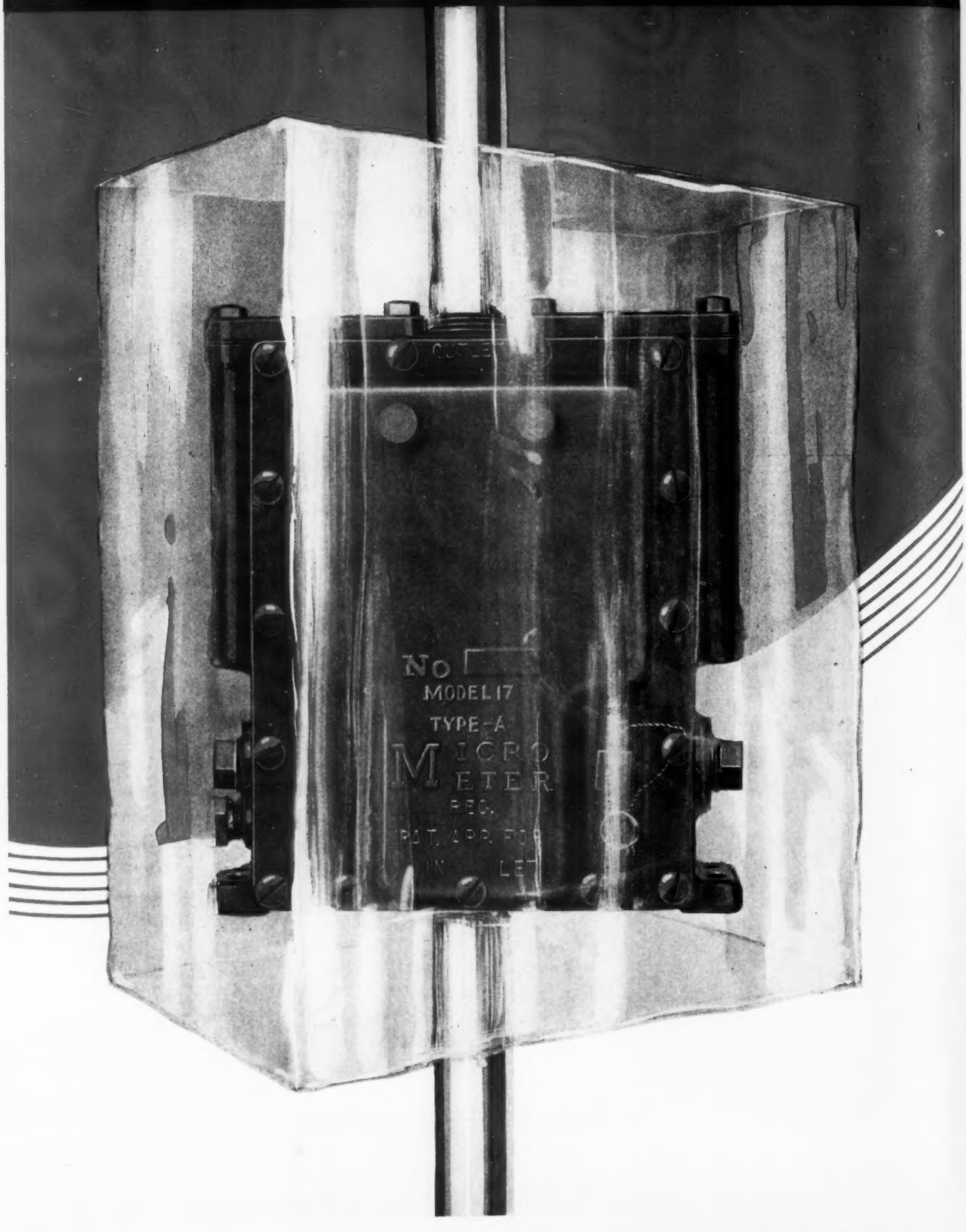
You can take Bill's word for it, this "Brookins Special" water can is a rare buy. You won't believe that its list price can possibly be so low. Ask to see one. If you don't know where and how, just drop us a line direct and we'll see that the salesman looks you up. Write us *today*, while it's on your mind. Your two-cent stamp will show you a big profit if you do.

1-9

Brookins
SERVICE STATION EQUIPMENT

THE BROOKINS MFG. CO.
700 Hawthorne St., Dayton, Ohio.
"Satisfying aids to satisfying service"

TEMPERATURE



CHANGES HAVE NO EFFECT on MICRO METER

Operation of the Micro-Meter is unaffected by temperature changes.

Here is one proof of that statement. Kerosene at 130° was pumped through a Micro-Meter held at winter operating temperature with perfect results.

Thousands of Micro-Meters in actual use also prove that important fact.

Micro-Meters are now in service from Montreal to Miami —many of them having operated through two winters and one summer.

Temperature changes have no effect on the Micro-Meter because the piston seal is obtained by expanding metal rings and not by close piston clearances. This is an exclusive Micro-Meter feature.

Specify Micro-Meters on your next Purchase of Meter Pumps.

NATIONAL PIPE PRODUCTS CORPORATION
ROCHESTER, PENNSYLVANIA

The Micro-Meter is of course a positive displacement meter, but inasmuch as this latter term has of late been so loosely applied as to cover many types of meters, we prefer to have the Micro-Meter known for what it is—a Positive Displacement Piston Meter.

Motorists Pay $1,400,000 Daily For State "Gas" Taxes

NEW YORK AMERICAN motorists spent about $1,400,000 daily last year for state gasoline taxes, the American Petroleum Institute finds.

The 1930 collections in the 48 states and District of Columbia reached a new high mark of $522,110,961. This is $73,927,712, or 17 per cent, more than 1929.

These figures do not include city and county taxes. As some states report gross and other net collections the total figure may be down slightly when the U. S. Bureau of Public Roads report is out based on net collections.

California again led the states by collecting $39,988,920, about $2,400,000 more than in 1929. Ohio placed second again with $38,802,460. Texas nosed out Pennsylvania for third place. Texas collected $32,052,442. Pennsylvania collected $32,006,868.

Other states collecting more than $20,000,000 in 1930 were Illinois, $28,611,552; New York, $29,437,697; and Michigan, $23,783,308.

Three states having the same tax rate for 1929 and 1930, showed a reduction in collections. These were Alabama, Arkansas, and Mississippi. Motorists in Alabama and Mississippi paid more gasoline taxes than the state reports indicate on account of local city and county taxes.

The Institute's report shows that about $26,000,000 was diverted to purposes other than highway maintenance, construction, and improvement. The main diversions were for state buildings, schools, oyster conservation, state departments, sea walls, and fish hatcheries.

The 1930 gasoline tax income is about twice that of 1927, three times that of 1926, four times that of 1925, 40 times that of 1922, and 100 times more than that of 1921. On the other hand there are less than twice as many motor vehicles in use today than in 1923 or 1924.

Increases in tax rates were few in 1930. That is attributed to being an off legislative year. Greater percentage gains are recorded for legislative years when the state assemblies are increasing gasoline tax rates.

Following are the tax collections by states:

State	1930	Tax Rate c Per Gal.	1929	Tax Rate c Per Gal.
Alabama	$6,901,474	4	$7,104,215	4
Arizona	2,718,613	4	2,559,831	4
Arkansas	6,292,599	5	6,730,347	5
California	39,988,920	3	37,559,713	3
Colorado	6,834,509	4	5,795,713	4
Connecticut	4,464,897	2	4,059,072	2
Delaware	1,549,622	3	977,231	3
Dist. of Col.	1,589,383	2	1,437,760	2
Florida	13,860,900	6	12,207,375	6
Georgia	13,389,672	6	10,263,711	6
Idaho	3,003,302*	4-5	2,205,085	4
Illinois	28,611,552	3	11,897,682*	3
Indiana	18,668,432	4	16,431,543	4
Iowa	11,793,462	3	10,068,331	3
Kansas	11,565,814	3	10,177,541	3
Kentucky	8,410,595	5	7,733,736	5
Louisiana	7,533,599†	4-5	6,925,304	4
Maine	4,344,823	4	3,834,331	4
Maryland	6,965,877	4	6,532,418	4
Massachusetts	10,740,318	2	9,888,730	2
Michigan	23,783,308	3	23,558,374	3
Minnesota	10,359,111	3	8,898,048	3
Mississippi	6,761,980	5	6,805,754	5
Missouri	8,818,513	2	7,805,384	2
Montana	4,146,605	5	3,790,745	5
Nebraska	9,137,828	4	7,861,243	4
Nevada	1,167,615	4	712,507	4
New Hampshire	2,596,766	4	2,332,913	4
New Jersey	11,373,959‡	2-3	9,996,104	2
New Mexico	2,733,005	5	2,421,882	5
New York	29,437,697	2	19,777,075†	2
North Carolina	12,533,453	5	11,983,262	5
North Dakota	3,601,042	3	3,150,284	3
Ohio	38,802,460	4	34,082,187	4
Oklahoma	11,575,203	4	10,929,287	4
Oregon	6,774,473	4	4,888,885	4
Pennsylvania	32,006,868§	4-3	35,038,619	4
Rhode Island	1,792,003	2	1,571,811	2
South Carolina	7,783,773	6	6,978,419	6
South Dakota	5,514,636	4	4,930,590	4
Tennessee	10,762,234	5	9,315,636	5
Texas	32,052,442	4	22,180,083	4
Utah	2,104,912	3½	1,979,212	3½
Vermont	1,880,321	4	1,703,091	4
Virginia	11,425,980	5	10,509,946	5
Washington	8,132,105	3	6,442,430	3
West Virginia	5,602,146	4	4,955,974	4
Wisconsin	8,757,555	2	7,867,900	2
Wyoming	1,464,605	4	1,325,435	4
Total	$522,110,961		$448,183,249	

1929
*Illinois tax effective 5 months only from Aug. 1.
†New York tax effective 8 months only from May 1.
1930
*Idaho tax rate raised March 1.
†Louisiana tax rate raised Nov. 27.
‡New Jersey tax rate raised Dec. 1.
§Pennsylvania tax rate reduced July 1.

Mississippi Taxes Oil Men Heavily

Mississippi levies a heavy toll on the oil man's pocket book for the privilege of doing business. Here is a list of licenses and taxes as given by the Harbor Oil Co., Mobile.

The state gasoline tax is 4 cents, the agricultural tax for inspection one-fortieth of 1 cent, and the city tax 1 cent.

For engaging in a wholesale gasoline business the city charges an annual fee of $500, and for a wholesale lubricating oil business $250 a year.

Each gasoline pump requires an annual license for state and county of $50.60, then a city tax of $35. Each station retailing lubricating oil pays the city $25 a year.

The state has a tax of 2 cents a gallon on lubricating oil, plus one-half of 1 per cent of the gross wholesale sales on lube oils, kerosine and fuel oils.

Of course there is the license fees for trucks and personal property taxes, but why bring those up?

* * *

Jobber Will Have to Go One-Stop Also

The trend towards one-stop service stations will make the oil jobber also a jobber of tires, batteries and accessories to his stations, so believes L. B. Paine, Superior Oil Co., Gulfport, Miss.

The big swing in station management, he points out, is towards a company operated station, a tighter control on the business by the jobber. In support of his belief he points out that there are not 12 stations in his territory, the southern third of Mississippi, that could be classed as real dealer outlets. This figure does not cover bulk service stations.

The jobber of the future in Mr. Paine's picture, will stock the complete line carried by a one-stop station in order that these stations may earn the maximum discounts on tires and accessories, and to insure uniformity of products sold.

Mr. Paine of course does not vision every station of today turned into a complete one-stop station. There will be room for a few complete stations in any given city, he said, while the stations in outlying districts will carry the necessary small accessories that would be purchased in a neighborhood store.

Lack of sufficient capital to invest in a stock of one-stop goods is holding back the jobber now, he said, but the day is coming when the jobber will have to meet the need for wholesaling these goods to his stations.

ADVERTISING PAGES REMOVED

ON THE LAZY BENCH

"Oh-h-h, Lemmel, vat you t'ink? I vas arrested today for speedink."

"Vat, you? Vy, I didn't know you had a car."

"No, no, not dat, Speedink—speedink—on her sidewalk."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

"Yes," said the specialist, as he stood at the bedside of the sick purchasing agent, "I can cure you."

"What will it cost?" asked the sick man, faintly.

"Five hundred dollars."

"You'll have to shade your price a little," replied the purchasing agent, "I had a better bid from the undertaker."

—The Sohioan
Standard Oil of Ohio

* * *

A young salesman, whose wife was making a prolonged visit at the home of her parents, became quite excited on receiving the following telegram: "Twins arrived, doing fine, more later."

He rushed to the nearest telegraph office and wired to his wife: "My gosh kid, countermand later order, two is plenty."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

They were on their honeymoon and the groom gave the porter a dollar not to tell anyone they were bride and groom. At breakfast the next morning, everyone stared. The groom called the porter and asked: "Did you tell anyone we were just married?"

"No, sah," replied the porter, "I told 'em yo' all was single."

—The Sohioan
Standard Oil of Ohio

* * *

It was a little girl who prayed: "God, make all the bad people good, and all the good people easy to live with."

—The Diamond
Mid-Continent Petroleum Corp.

Preparation

The professor was delivering the last lecture of the term. He told the students with much emphasis that he expected them to devote all their time to preparing for the final examinations.

"The examination papers are now in the hands of the printer," he concluded. "Now, is there any question you would like answered?"

Silence prevailed for a moment, then a voice piped up:

"Who is the printer?"

—Our Sun
Sun Oil Co.

* * *

Not Accounted For

Izzy: "I've had a hard life. At the age of eighteen, I was left an orphan."

Dizzy: "Well, what did you do with it?"

—The Gas Line
West Penn Oil Co.

* * *

A rookie received a severe lecture one day from his sergeant. The next day he passed the sergeant without saluting. "Hey, youse, why don't you salute me?" yelled the sergeant. "Aw," said the rookie, I thought you was still mad at me."

—The Sohioan
Standard Oil of Ohio

* * *

After a visit to the city an English yokel said to his friend: "Some of them bank blokes are pretty slick with their fingers; I saw a feller down in the bank of Chester an' blow me if 'e didn't 'ave to keep a wet sponge alongside 'im to keep his fingers from gettin' red 'ot. 'e told me so, hisself."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

A man was buying a suitcase, but none of those shown pleased him at all.

"When I buy a bag," he declared, "I like to see some cowhide in it."

"Oi," said the merchant, "you should want tricks. Am I a magician yet?"

—Our Sun
Sun Oil Co.

EN-AR-CO
MOTOR OIL
WHITE ROSE
GASOLINE
WHITE ROSE
ETHYL
ROYAL
GASOLINE
EN-AR-CO
GEAR LUBRICANT

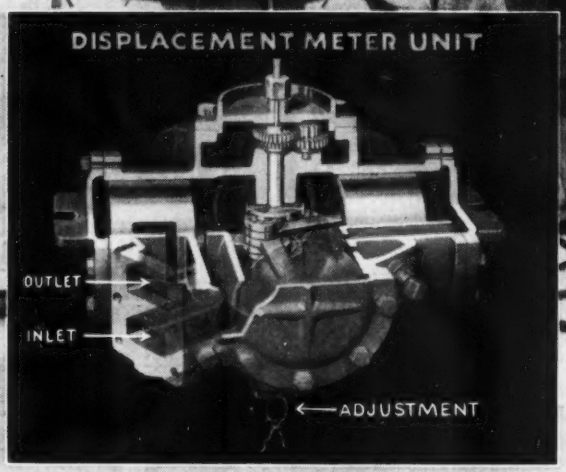
The National Refining Co.
Cleveland, Ohio

BUBBLE TOWERS

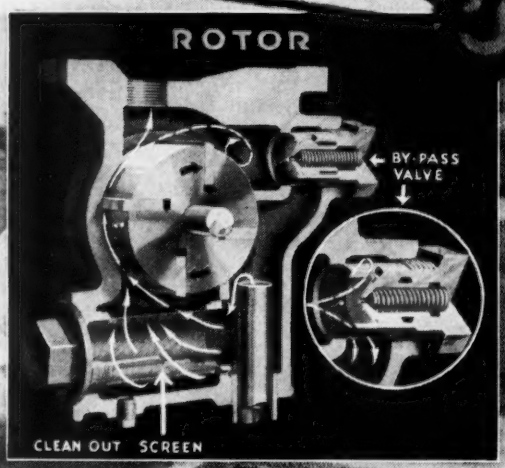
KELLOGG

The M. W. Kellogg Co., 225 Broadway, New York; Tulsa, Okla., Philtower Bldg.; Los Angeles, Cal., 1031 So. Broadway

From Kitty-Hawk *to the* Dornier DO-X
the Idea *has been the same*
. . . NOT A CHANGE IN PRINCIPLE
~ *and so in*



THE BENNETT POSITIVE DISPLACEMENT METER IS OF ALL-METAL CONSTRUCTION. PISTONS ARE OF LIGHTWEIGHT ALUMINUM ALLOY. CYLINDER WALLS ARE OF SOLID BRONZE. ALL OTHER WORKING PARTS ARE OF STAINLESS STEEL. PROLONGED TESTS HAVE PROVED THAT THIS NEW METER IS ACCURATE UNDER ALL OPERATING CONDITIONS.



Cut-Away

View of Pumping Unit

NOTE THE SIMPLICITY OF BOTH ROTOR AND BY-PASS VALVE DESIGNS. THE PATENTED BY-PASS VALVE PREVENTS OVERLOADING; BANISHES NOISE; ELIMINATES APPRECIABLE CURRENT VARIATION WHETHER NOZZLES ARE OPEN OR CLOSED; AND REDUCES CURRENT CONSUMPTION.

ADVERTISING PAGES REMOVED

Crude Production by Fields

By Telegraph—Daily average gross output, by fields in U. S., for week ending with dates below as compiled by A. P. I.

PRODUCTION SUMMARY	April 4	March 28
Production east of Rockies	1,727,000	1,744,950
Decrease		17,950
Total production in U. S.	2,252,100	2,275,350
Decrease		23,250
Crude oil imports	174,855	87,000
Increase		87,855
Total new crude supply	2,426,955	2,362,350
Increase		64,600

OKLAHOMA

	Apr. 4	Mar. 28
Allen Dome	7,000	6,850
Asher	700	700
Asher, West	8,150	8,350
Blackwell	3,000	2,950
Bowlegs	18,800	25,850
Braman	1,950	1,950
Bristow-Slick	12,250	12,600
Burbank	12,700	13,000
Carr City	12,200	14,900
Cromwell	4,800	4,850
Cushing	12,700	12,650
Davenport	950	950
Duncan Dist.	6,700	6,850
Earlsboro	11,250	15,300
Earlsboro, East	21,600	27,000
Earlsboro, So.	5,850	7,050
Fox-Graham	4,050	4,050
Garber	3,950	3,950
Healdton	10,600	10,600
Hewitt	6,100	6,150
Hubbard	900	900
Konawa	13,250	13,000
Little River	35,800	42,800
Little River, E.	9,150	11,450
Logan Co.	3,950	4,000
Maud	1,300	2,300
Mission	8,750	15,400
Oklahoma City	127,450	120,800
Okmulgee, No.	9,200	9,200
Okmulgee, So.	5,000	5,100
Osage (Outside Burbank)	22,400	22,500
Papoose	2,000	2,000
Pearson	550	600
Sasakwa	3,350	4,350
St. Louis	13,800	17,150
Scholem-Alechem	12,750	12,850
Searight	3,200	4,800
Seminole	5,050	10,300
Seminole, East	1,200	1,550
Thomas	550	550
Tonkawa	5,200	5,150
Wewoka	8,650	8,700
Yale-Jennings	5,500	5,500
Others	47,300	45,300
Total, Okla.	511,550	552,800
Decrease		41,250

KANSAS

August-Fox Bush	2,850	2,850
Churchill	3,150	3,250
El Dorado Towanda	12,150	12,200
Florence-Covert	700	700
Greenwood Co.	16,250	16,300
Oxford	2,200	2,250
Peabody-Elbing	1,550	1,550
Rainbow Bend	1,400	1,400
Russell	3,000	3,000
Sedgwick Co.	17,800	18,500
Voshell	17,900	18,300
Others	30,000	29,000
Total, Kans.	108,950	109,300
Decrease		350

NORTH LOUISIANA

Caddo, light	7,550	7,700
Caddo, heavy	2,750	2,750
Cotton Valley	1,800	1,800
De Soto and Red River	2,700	2,700
Haynesville	5,650	5,700
Holly	550	600
Homer	3,350	3,350
Sarepta Carterville	1,400	1,400
Urania	4,550	4,600
Zwolle	7,500	7,650
Others	1,450	1,450
Total, La.	39,250	39,700
Decrease		450

ARKANSAS

Champagnolle	3,100	3,100
El Dorado	3,750	3,800
Lisbon	800	750
Nevada	950	1,000
Smackover, light	4,300	4,200
Smackover, heavy	32,300	31,850
Stephens	850	850
Others	1,150	1,150
Total, Ark.	47,200	46,700
Increase		500

ROCKY MOUNTAIN

Wyoming

Big Muddy	2,200	2,100
Elk Basin	700	700
Grass Creek	2,000	2,200
Labarge	2,000	1,500
Lance Creek	250	250
Lost Soldier	2,750	2,150
Oregon Basin	1,300	1,300
Rock River	2,000	2,000
Salt Creek	25,750	24,850
Others	3,700	3,750
Total, Wyo.	42,650	40,800
Increase		1,850

Montana

Cat Creek	1,050	1,050
Pondera	1,550	1,700
Sunburst	4,450	4,450
Others	1,650	1,700
Total, Mont.	8,700	8,900
Decrease		200

Colorado

Florence	400	450
Fort Collins	950	950
Moffat (Craig)	950	1,000
Others	1,850	1,800
Total, Colo.	4,150	4,200
Decrease		50

New Mexico

Artesia	550	550
Bal. Eddy Co.	200	200
Hobbs High	33,250	31,600
Bal. Lea Co.	6,200	7,000
Hogback	450	450
Rattlesnake	1,100	1,100
Table Mesa	50	100
Total, N. M.	41,800	41,000
Increase		800
Total, Rocky Mountain	97,300	94,900
Increase		2,400

TEXAS (OUTSIDE GULF COAST)

Panhandle District

	Apr. 4	Mar. 28
Carson Co.	3,400	3,850
Gray Co.	39,750	42,200
Hutchinson Co.	7,600	8,850
Wheeler Co.	350	350
Others	300	300
Total, Panhandle Tex.	51,400	55,550
Decrease		4,150

North Texas

Archer Co.	11,800	11,750
Burkburnett	7,200	7,150
Electra	8,850	8,900
Iowa Park and K. M. A.	3,700	3,700
Montague-Cooke	5,300	5,300
Wilbarger	10,400	10,500
Young Co., No.	9,100	9,150
Others	1,300	1,350
Total in No. Texas	57,650	57,800
Decrease		150

West Central Texas

Brown Co.	4,100	4,100
Callahan Co.	2,000	2,000
Coleman Co.	1,100	1,100
Eastland-Desdemona	4,000	4,000
Jack Co.	950	950
Palo Pinto Co.	400	400
Shackleford Co.	4,000	4,000
Stephens Co.	4,600	4,600
Throckmorton Co.	400	400
Young Co., So.	2,600	2,600
Others	1,200	1,200
Total, West Cent. Tex.	25,350	25,350

West Texas

Crane and Upton Cos.	23,800	24,500
Crockett Co.	1,800	1,800
Ector Co.	5,800	6,300
Howard Co.	27,000	27,050
Jones Co.	1,200	1,200
Mitchell and Scurry Cos.	1,900	1,850
Reagan Co.	33,250	29,700
Winkler Co.	46,600	46,700
Yates	92,500	93,000
Bal. Pecos Co.	4,200	4,200
Others	7,000	7,200
Total, West Texas	245,050	243,500
Increase		1,550

East Central Texas

Boggy Creek	2,200	2,300
Corsicana-Powell	4,800	4,850
Currie	300	300
Mexia	3,600	3,600
Nigger Creek	150	150
Richland	100	100
Rusk Co.:		
Joiner field	51,500	47,850
Kilgore	68,200	56,500
Gregg Co.:		
Longview	25,000	17,750
Van Zandt	35,800	35,050
Wortham	500	500
Others	50	50
Total, E. Cen. Tex.	192,200	169,000
Increase		23,200

Southwest Texas

Chapman Abbot	4,600	4,700
Dale	250	250
Darst Creek	17,000	18,200
Laredo Dist.	14,500	14,600
Luling	9,450	9,400
Lytton Spgs.	750	750
Salt Flat	12,800	13,000
Somerset	1,300	1,300
Others	500	550
Total S. W. Texas	61,150	62,750
Decrease		1,600
Total, Texas (Outside Gulf Coast)	632,800	613,950
Increase		18,850

GULF COAST

Coastal Texas

Barbers Hill	22,500	21,200
Batson	1,000	1,000
Big Creek	3,300	3,300
Blue Ridge	1,150	1,100
Boling	750	800
Damon Mound	650	600
Esperson	2,400	2,500
Fannett	400	500
Goose Creek	4,500	4,300
Hankamar	2,700	2,250
Hull	5,850	6,100
Humble	10,800	9,950
Moss Bluff	800	750
No. Dayton	600	600
Orange Co.	2,000	1,850
Orchard	1,950	1,700
Pettus	7,150	7,100
Pierce Junct.	8,900	10,050
Port Neches	1,400	1,450
Raccoon Bend	9,000	9,000
Refugio Co.	30,150	29,100
Saratoga	900	900
Somerville	2,400	2,350
Sour Lake	2,050	2,050
So. Liberty	2,200	2,300
Spindletop	10,250	10,350
Sugarland	11,750	11,800
West Columbia	4,300	4,350
Others	2,000	1,950
Total, Coastal Texas	153,800	151,250
Increase		2,550

Coastal Louisiana

Edgerly	500	500
Evangeline	750	800
Hackberry, E.	2,000	2,050
Hackberry, Old	800	800
Lake Barre	2,850	2,850
Lockport	6,050	5,200
Port Barre	1,800	1,750
Sulphur Dome	1,700	1,700
Vinton	6,250	6,200
White Castle	1,000	1,000
Others	2,950	3,250
Total, Coastal La.	26,650	26,100
Increase		550
Total, Gulf Coast	180,450	177,350
Increase		3,100

CALIFORNIA

Dominguez	12,000	12,300
Elwood-Goleta	34,400	35,000
Huntington Beach	20,800	21,800
Inglewood	15,000	15,200
Kettleman Hills	26,000	25,000
Long Beach	90,000	89,600
Midway-Sunset	54,000	53,000
Playa del Rey	30,200	29,800
Santa Fe Spgs.	71,200	74,000
Seal Beach	15,500	15,700
Ventura Ave.	44,500	45,000
Others	111,500	114,000
Total, Calif.	525,100	530,400
Decrease		5,300

EASTERN

(Not including Mich.)	101,050	101,700
Decrease		650

MICHIGAN

Mt. Pleasant	6,550	6,650
Muskegon	1,750	1,750
Saginaw	150	150
Total, Mich.	8,450	8,550
Decrease		100

Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refinery Operations, Week Ended April 3 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended April 3
Plants Reporting.....	10	23	23	10	10	76
Da. Av. Cap. (Bbls.)..	94,000	162,500	107,400	71,500	60,700	496,100
Da. Cracking Capacity	53,200	64,600	23,100	26,250	31,700	198,850
Da. Av. Crude Runs..	49,965 — 17.9	86,945 — 7.6	53,072 — 7.1	29,476 — 8.1	39,554 — 4.7	259,012 — 9.3
Da. Av. Other Oil....	9,228 + 49.0	4,212 — 42.9	1,305 — 60.4	1,025 + 23.6	14,750 — 15.0	30,520 — 12.9
GASOLINE—Gallons						
Stocks, March 27....	29,739,000	49,056,000	33,352,000	10,732,000	*6,095,000	*128,974,000
Prod. 3-27 to 4-3.....	10,628,000 — 11.4	13,577,000 — 17.2	7,796,000 — 9.3	2,924,000 — 6.0	5,692,000 — 5.8	40,617,000 —12.0
Ship. 3-27 to 4-3.....	10,048,000 — 14.8	15,793,000 + 0.8	5,593,000 — 4.3	2,883,000 — 40.3	6,823,000 + 4.4	41,140,000 — 7.9
Stocks, April 3.....	30,319,000 + 2.0	46,840,000 — 4.5	35,555,000 + 6.6	10,773,000 + 0.4	4,964,000 — 18.6	128,451,000 — 0.4
Ratio Sales to Prod...	94.5%	116.3%	71.7%	98.6%	119.9%	101.3%
KEROSINE—Gallons						
Stocks, March 27....	8,283,000	16,084,000	2,332,000	47,000	191,000	26,937,000
Prod. 3-27 to 4-3.....	2,045,000 — 1.5	1,611,000 — 28.5	1,028,000 — 10.9	.....	529,000 — 0.3	5,013,000 — 14.6
Ship. 3-27 to 4-3.....	2,288,000 + 5.3	2,312,000 — 5.5	1,194,000 — 10.4	11,000 + 37.5	224,000 — 28.4	6,029,000 — 3.9
Stocks, April 3.....	8,040,000 — 2.9	15,383,000 — 4.4	2,166,000 — 7.1	36,000 — 23.4	296,000 + 55.0	25,921,000 — 3.8
Ratio Sales to Prod...	111.9%	143.5%	116.1%	.....	68.1%	120.3%
STOVE DISTILLATE—Gallons						
Stocks, March 27....	3,218,000	4,654,000	612,000	90,000	22,000	8,596,000
Prod. 3-27 to 4-3.....	590,000 + 29.4	759,000 — 0.4	309,000 — 18.5	17,000 — 58.5	38,000 + 26.7	1,713,000 + 2.7
Ship. 3-27 to 4-3.....	709,000 + 26.4	579,000 — 36.0	376,000 + 9.3	31,000 + 3.3	36,000 + 12.5	1,731,000 — 7.5
Stocks, April 3.....	3,099,000 — 3.7	4,834,000 + 3.9	545,000 — 10.9	76,000 — 15.6	24,000 + 9.1	8,578,000 — 0.2
Ratio Sales to Prod...	120.2%	76.3%	121.7%	182.4%	94.7%	101.1%
GAS OIL—Gallons						
Stocks, March 27....	3,316,000	27,555,000	3,034,000	4,271,000	5,587,000	43,763,000
Prod. 3-27 to 4-3.....	940,000 + 10.3	3,379,000 +164.4	928,000 + 82.7	423,000 — 19.9	2,166,000 — 10.0	7,836,000 + 40.6
Ship. 3-27 to 4-3.....	913,000 + 24.4	2,123,000 +281.8	1,111,000	1,130,000 +166.5	2,093,000 + 7.2	7,370,000 +101.0
Stocks, April 3.....	3,343,000 + 0.8	28,811,000 + 4.6	2,851,000 — 6.0	3,564,000 — 16.6	5,660,000 + 1.3	44,229,000 + 1.1
Ratio Sales to Prod...	97.1%	62.8%	119.7%	276.1%	96.6%	94.1%
FUEL OIL—Gallons						
Stocks, March 27....	10,035,000	50,131,000	61,152,000	12,926,000	22,454,000	156,698,000
Prod. 3-27 to 4-3.....	4,389,000 — 9.4	4,510,000 — 18.2	5,308,000 — 16.2	4,118,000 — 8.5	4,338,000 — 7.9	22,663,000 —12.5
Ship. 3-27 to 4-3.....	4,487,000 + 6.4	5,299,000 — 6.1	5,649,000 — 14.7	3,971,000 — 11.6	4,806,000 + 5.9	24,212,000 — 5.1
Stocks, April 3.....	9,937,000 — 1.0	49,342,000 — 1.6	60,811,000 — 0.6	13,073,000 + 1.1	21,986,000 — 2.1	155,149,000 —1.0
Ratio Sales to Prod...	102.2%	117.5%	106.4%	96.4%	110.8%	106.8%

Gasoline Produced by Various Methods, Week Ended April 3

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run.....	5,144,000	48.4	9,413,000	69.3	4,952,000	63.5	2,541,000	86.9	1,945,000	34.2	23,995,000	59.1
Cracked.....	4,617,000	43.4	3,115,000	22.9	1,521,000	19.5	259,000	8.9	2,833,000	49.7	12,345,000	30.4
Natural.....	867,000	8.2	1,049,000	7.8	1,323,000	17.0	124,000	4.2	914,000	16.1	4,277,000	10.5
Total.....	10,628,000		13,577,000		7,796,000		2,924,000		5,692,000		40,617,000	

\+ or — columns are % change over previous week.

*Revised due to error in March 27 report.

Runs to Stills Cut at Mid-Continent Plants

Staff Special—By Telegraph

TULSA, April 7

CRUDE oil runs at 76 Mid-Continent refineries that report their operating statistics weekly to NATIONAL PETROLEUM NEWS, were 26,648 barrels daily average less in the week ended April 3 than in the preceding week. All districts of the area reduced runs with Kansas making the largest reduction.

Runs of other oils were lowered 4500 barrels daily average.

Gasoline production was reduced 5,516,000 gallons as compared with the preceding week's output. Gasoline shipments were reduced 3,525,000 gallons although shipments increased from the Oklahoma, and Louisiana-Arkansas districts. Shipments from West Texas fell almost 2,000,000 gallons.

Kerosine stocks were lowered 1,016,000 gallons. Distillate shipments fell 7.5 per cent and stocks were changed but little. Gas oil shipments increased but stocks rose 1.1 per cent

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended April 3. Change in stocks figures from March 6.

GASOLINE

	Gallons
Production	175,565,000
Shipments	177,304,000
Net change in stocks	—1,739,000
Ratio sales to production	101.0%

KEROSINE

	Gallons
Production	22,390,000
Shipments	23,907,000
Net change in stocks	—1,517,000
Ratio sales to production	106.8%

STOVE DISTILLATE

	Gallons
Production	6,882,000
Shipments	7,403,000
Net change in stocks	—521,000
Ratio sales to production	507.6%

GAS OIL

	Gallons
Production	23,359,000
Shipments	22,541,000
Net change in stocks	+818,000
Ratio sales to production	96.5%

FUEL OIL

	Gallons
Production	97,780,000
Shipments	100,342,000
Net change in stocks	—2,562,000
Ratio sales to production	102.6%

because of larger output. Fuel oil stocks were lowered 1,500,000 gallons.

Kansas Oil Men to Meet At Wichita Apr. 23-24

WICHITA, April 4.—The Kansas Oil Men's Association will hold its 17th annual convention at the Lassen hotel, Wichita, April 23 and 24, according to an announcement by Secretary John A. Motter. The program will be announced soon.

Salesmanship will be one of the important topics discussed, according to present plans, and Secretary Motter has secured O. J. McClure, originator of the McClure method of training salesmen and author of "Practical Selling," as one of the principal speakers.

Secretary Motter announced in his bulletin of March 31 that the association has secured since January 1, 60 new members. The K. O. M. A. convention has been known in times past as one of the best among oil associations, and with these new members, Secretary Motter anticipated the best rounded meeting in the association's history.

Wichita Oil Men Test City License Tax

WICHITA, April 4.—The Wichita Oil Men's Club has undertaken the promotion of a suit to test the validity of the City of Wichita's license tax ordinance, whereby each service station is taxed $100 a year. The ordinance, No. 10-812, was passed July 28, 1930. It provides a tax for everything from public auctions to miniature golf courses.

Indications are the club will attack the ordinance on the ground that since the new state tax law became effective, that section of the ordinance levying a tax against stations is invalid. The state law states that the tax levied is in lieu of all other taxes, and a similar suit at Garden City resulted in a supreme court decision in favor of the oil companies.

WASHINGTON, D. C.—A proposal that the city of Vancouver, B. C., begin to retail gasoline and motor oil at the municipal airport on Sea Island has been made by four oil companies at Vancouver, according to the Department of Commerce.

The companies offered to install storage tanks, fill pipes, service pit and hose while the city would provide space for tanks. Oil supplies would be bought from the companies at wholesale prices, the proposal indicated.

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100 No. 4000 Valve Cores in metal boxes.
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25 No. 935 Valve Caps (for bent valve stems) in metal boxes.
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1 No. 5328 Pump Connection. 2 No. 6589 Double-use Tools.
2 No. 4520 Tools for removing damaged valve cores.

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The Schrader "Reddy Seller", painted red, looks like a big tire gauge—6" in diameter; 15" high. Works like a slot machine. Keeps stock orderly; tools handy. Special Gas Station Assortment is somewhat different from that shown in illustration (see list).

MERRILY on goes the struggle among gas stations, to outdo one another in "free" services. But surveys show that the average motorist is just as much interested in what he can *buy* conveniently as in what he can get for nothing.

Lost valve caps, worn-out valve cores—where could he have them more conveniently replaced than in the place he patronizes so frequently—the gas station? Where else is he so likely to buy that tire gauge he long promised himself? . . . And what brand of cap, core or gauge is he most ready to accept? *Schrader*—best known in America!

The Schrader "Reddy Seller" Cabinet and Special Assortment for Gas Stations

is directly related to the service nowadays expected from every gas station. It is so compact, costs so little, supplies such a long-felt need and pays so handsomely that no station can really be up to date without it. The cabinet is absolutely FREE. You pay only for the merchandise—and at an assortment price that is actually less than the regular dealer price of the merchandise if bought separately. Assortment includes a number of service devices needed by station operators to give the motorist "100 per cent air service". We invite station-operating gasoline distributors to write for further details. A. Schrader's Son, Inc., Brooklyn, N. Y.

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The best way to get acquainted with International Trucks is to ask the nearest branch for a demonstration—there are 183 Company-owned branches in the United States and Canada. You will see International performance at first hand under all the conditions you want to put it through. You will see these new trucks in capacities and wheelbase lengths suitable for your work. Sizes—¾-ton to 5-ton. Write us for information.

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INTERNATIONAL TRUCKS

Refinery - Tank Wagon Markets

Refinery Markets Quiet in All Areas; Retail Gasoline Markets Steady

CLEVELAND, April 6

REFINERY markets throughout the country were generally quiet the first week in April. Retail markets for gasoline were fairly steady although critical cut-price situations cropped up in a good many localities.

Tank car prices for both light and heavy oils sought lower levels in the majority of markets.

While the Oklahoma market for U. S. Motor gasoline remained unchanged at 3.50 to 4 cents, refiners in other sections of the Mid-Continent began underselling the low of this price range by an 0.125 cent. This was quickly reflected in the Chicago market where U. S. Motor dropped from a range of 3.50 to 3.875 cents to a range of 3.375 to 3.75 cents.

A bright spot in the Mid-Continent picture was the report that The Texas Co. was in the market for approximately 100,000 barrels of 60-62, 400 end point gasoline. Some business was said to have been placed against the inquiry by the end of last week although details of transactions were not available.

Gasoline prices in most areas along the Atlantic seaboard were unchanged and reports from traders indicated that jobbers were buying a little more liberally. The Baltimore market was the only one where prices receded, U. S. Motor dropping 0.25 to 6.25 cents.

West coast markets again became unsettled following the revisions of crude prices made by Union Oil Co. and Standard of California early in the week. Tank car prices for gasoline and other light oils dropped 0.5 cent a gallon and prices as low as 8 cents a gallon were posted at service stations in the Los Angeles district.

Bulk markets on the west coast and at the Gulf remained quiet. Foreign buyers still were obtaining the bulk of their requirements from Roumania and with tank car markets along the east coast decidedly unsettled, cargo buyers in that territory displayed very little interest in the market.

Chicago Market Marks Time; Demand Steady

Staff Special
CHICAGO, April 4

THE Chicago tank car market was quiet during the week ended April 4. Practically nothing of outstanding interest developed and prices of most products were without material change. The weather over most of the middle west continued favorable to motoring and retail dealers generally reported consumption was good.

The movement of gasoline in tank cars continued on a steady basis, with jobbers in the market frequently for small lots. Refiners generally said their contract jobbers were ordering out material in satisfactory quantities. Most of the orders received were for prompt shipment, although some business was being received for shipment over the remainder of April.

Most grades of gasoline showed little or no change in price over the week. While most refiners and many marketers continued to get 3.50 cents for their U. S. Motor gasoline, there were enough sales reported at 3.375 cents to establish this figure as a part of the going price range. Most of the marketers who were moving Motor at 3.375 cents said they were shipping either North or West Texas gasoline. They reported only a few spots in Oklahoma where they could buy full specification U. S. Motor at 3.25 cents and consequently wanted 3.50 cents for gasoline from this district.

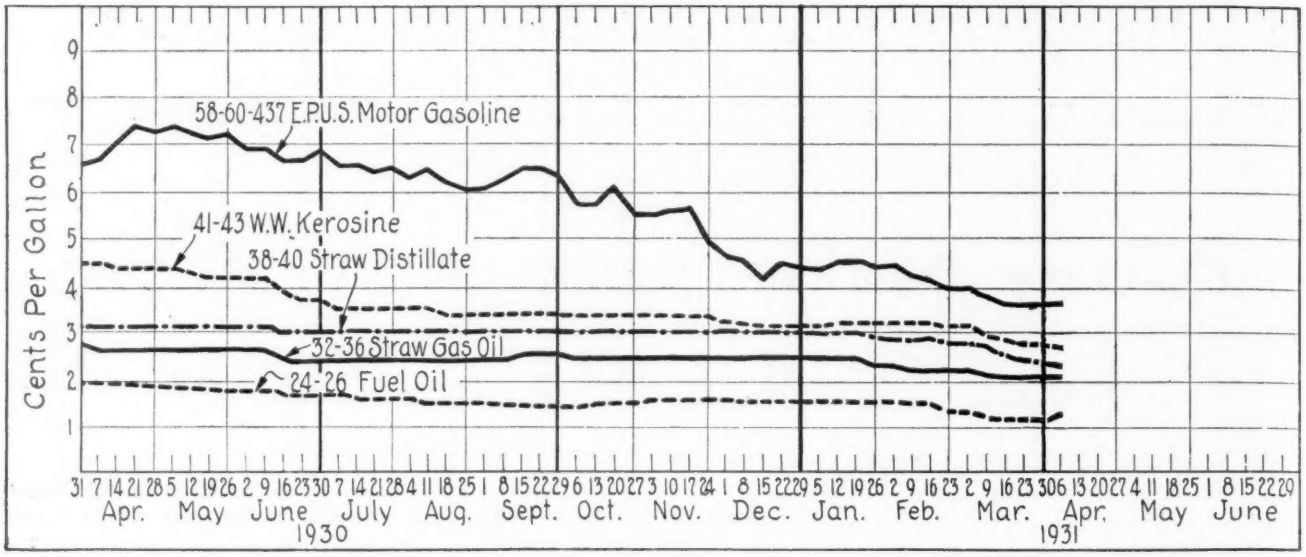
Despite the fact that more U. S. Motor was available at 3.375 cents, most of the trade were inclined to take a bullish attitude on the market. They were of the opinion that consumption would continue to increase and that proration of the East Texas field would keep it from being a further bearish influence on the market. One indication of this attitude was the reluctance of most sellers to do any short selling of gasoline for future shipment.

The movement of anti-knock gasolines was reported good by most traders. Sales generally were reported at 3.375 to 4.875 cents depending mostly on the anti-knock rating of the product. High gravity gasolines were inactive; prices showed little change.

A number of sellers said they had experienced an excellent demand for kerosines, mostly the 41-43 w.w. grade, while others said they were doing little business. One seller said his kerosine business so far this year had been considerably better than up to this time last year. Sales of the 41-43 w.w. continued to range mostly from 2.625 to 3 cents.

The market for distillate, gas and fuel oils showed little, if any, change from the preceding week. The better grades of home burner oils were in fair demand, but oils with a higher cold test were decidedly quiet. Industrial gas oil was offered as low as 1.375 cents, but buying remained light.

Current Prices of Principal Mid-Continent Refined Products


Cents Per Gallon
58-60-437 E.P.U.S. Motor Gasoline
41-43 W.W. Kerosine
38-40 Straw Distillate
32-36 Straw Gas Oil
24-26 Fuel Oil
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1930
1931

Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

Standard of N. J. Sued On Alcohol Patents

CLEVELAND, April 7.—Suit for infringement of patents covering the manufacture of higher alcohols from petroleum gases was filed against the Standard Oil Co. of New Jersey by the Petroleum Chemical Corp., recently. The latter company is a subsidiary of National Distillers Products Corp.

Several years ago the Standard Oil Co. of New Jersey began the operation of a plant for the manufacture of alcohols such as propyl, butyl, amyl, and others by the esterification of chiefly unsaturated refinery hydrocarbon gases, it is understood. These esters were then hydrolyzed to form the corresponding alcohols. The method of manufacture was first developed by Carleton Ellis, it is understood, and the commercial process developed from this first small scale work by the Standard.

The process of the Petroleum Chemical Corp has been operating for a considerable time at Barnsdall, Oklahoma, in connection with the Barnsdall refinery there. The company has been marketing solvent alcohols to the general trade for a considerable time. Petroleum Chemical Corp. has been sponsored chiefly by the National Distillers, Barnsdall Corp., Blair and Co., and A. D. Little, Inc., chemical engineers. Suit was filed in the U. S. District Court for New Jersey.

Russians To Sell In Africa

WASHINGTON—Russian gasoline and oils in South Africa to compete with American and European oil companies, will be marketed on a large scale shortly.

The Atlas Petroleum Products, Ltd., which has been operating in the South African Union on a concession granted by the Naphtha Syndicate of Russia, will receive financial aid from the Soviet Government to enable it to compete successfully with other companies. Bulk plants may be built by it at Capetown.

Shipments From Southern California

LOS ANGELES, April 2—Shipments of bulk petroleum from southern California ports to Foreign and Atlantic Seaboard ports increased 490,214 barrels for week ended Mar. 28 to give a total of 1,164,561 barrels. Destination and quantity of shipments were as follows:

Destination	Crude	Gasoline	Diesel	Kerosine	Fuel	Total
Pacific For.	57,772	152,788	77,843	123,304	292,631	704,338
Atlantic Dom.	.....	257,264	.....	41,000	.....	298,264
Atlantic For.	.....	161,979	.....	.....	.....	161,979

Prices 10 Years Ago
April 4, 1921

	Oklahoma	Penna.
58-60 U. S. Motor	16.25-17.00	19.50-20.50
80-84 Natural	11.75-12.25	.....
Kerosine (42-43 Okla.; 47 w. w. Pa.)	4.25-4.50	9.00-9.25c
Fuel Oil (24-26 Okla.; 36-40 Pa.)	$0.70-$0.80	5.00-5.50
Crude (Okla. 35-35.9)	$1.75	$3.00
Chicago tank wagon (no state tax)		23.00c

Prices A Year Ago
April 7, 1930

	Oklahoma	Penna.
58-60 U. S. Motor	6.7361	7.50-7.75c
Grade A Natural	5.75c	.....
Kerosine (Okla. 41-43; Pa. 47 w. w.)	4.375-4.50c	6.375-6.75c
Fuel Oil (Okla. 24-26; Pa. 36-40)	$0.80-$0.85	4.125-4.50c
Crude (Okla. 35-35.9)	$1.17	$3.00
Chicago tank wagon (including 3c tax)		17.00c

Mid-Continent Refinery Markets

Refiner Seeking Large Quantity Gasoline

Staff Special

TULSA, April 4

REPORTS that The Texas Co. had inquired for a considerable quantity of 60-62, 400 e.p. gasoline furnished the feature of major interest in the Mid-Continent refinery market the week of March 30-April 4.

The company was said to have inquired for up to 100,000 barrels of that grade of gasoline. Reports from Houston, April 4 indicated the purchaser had not obtained that quantity, but had bought some gasoline at a price reported to have been in the neighborhood of 3.50 cents a gallon. Confirmation of all details was lacking.

The domestic market generally showed little change throughout the week. Refiners watched with interest the starting of the new plants in the East Texas field. Reports from that area April 4 were to the effect some sizeable shipments had been made into Standard of Indiana territory. The East Texas Refining Co. was reported to have made the heaviest shipments, that company's prevailing quotation for U. S. Motor grade being 3.25 cents a gallon to marketers. Since that area at present has the same freight differential over Group 3 as does North Texas—approximately 0.125 cent a gallon—the 3.25-cent prices approximately 3.375 cents a gallon, Group 3.

Kansas and Oklahoma refiners continued to obtain 3.50 cents a gallon for U. S. Motor grade, but the North Texas district lowered the price range 0.125 cent, the bottom April 4 being 3.375 cents.

Arkansas and Louisiana refiners reported their volume of business into differential territory held up well, and no changes were made in quotations.

Regardless of quotations, however, there was only a small amount of buying in the open market. Jobbers appeared willing to apply their orders against existing contracts, and the spring demand had not increased sufficiently to cause any noticeable increase in purchases. With such a condition prevailing, the refiners who must ship their production as they make it, due to small storage facilities, obtained the bulk of what spot business existed.

Natural gasolines, with the exception of grades A and AA, continued to lose ground with demand exceptionally light. The Standard Oil Co. of Indiana early in the week bought 50 cars of grade AA for shipment over 15 days at 2.25 cents a gallon. No other large purchases were reported.

A majority of manufacturers reported that despite the light demand they were in comparatively good shape. This was indicated by the relatively small amount of naturals available, but there nevertheless was a sufficient amount, under present demand, to hold the market down.

Kansas refiners reported demand for kerosines had increased as "plowing weather" spread over their territory. The blizzard late in March covered much of the wheat belt with a blanket of snow which soon melted and gave the ground the much needed moisture.

Oklahoma and Texas refiners reported little change in kerosine demand, while the Arkansas and Louisiana refiners said buying was sufficient to take care of the relatively small output in that district.

Distillate prices lost some ground as the season drew to an end. The season, incidentally, was a poor one for distillates, due to the open winter and the relatively low prices for kerosine.

Gas oil demand was larger in volume in Arkansas and Louisiana district, although prices were lower in line with other refining areas. The demand was caused by jobber buying in anticipation of a good demand from rice growers. The rice growing belt has not experienced a wet spring so far and growers have had to resort to their motor driven pumps, with the result gas oil consumption has increased.

Other districts reported little change in gas oil demand. Prices were slightly lower in Texas and Oklahoma.

The fuel oil market was quiet throughout the week, with demand reported mostly of a routine nature. No large buying was reported either from railroads or industrial consumers. Prices showed only minor changes.

A few refiners said demand for neutral oils and bright stocks had increased slightly, while others said they saw no change in the light demand which had prevailed for many months. Prices were slightly lower in a few quarters, particularly for bright stocks.

Wax prices ranged from 2 to 2.125 cents, with two or three refiners reported still out of the market.

Republic Oil Refining Builds Plant at Texas City

HOUSTON, April 3

GROUND has been broken for a plant of the Republic Oil Refining Co., at Texas City, near the foot of the Houston ship channel, to have initial capacity of 5000 barrels and operate on Big Lake light gravity crude from West Texas.

The Republic Oil Refining Co. is a Texas corporation affiliated with the Republic Oil Co., of Coraopolis, Pa., and also the Big Lake Oil Co., of Pittsburgh, and Texon, Texas, subsidiary of Plymouth Oil Co.

Republic Oil Co., and Republic Oil Refining Co., of both which corporations O. D. Robinson of Pittsburgh is president, is also affiliated with a group of Eastern marketing companies. They operate in Pennsylvania, Ohio and Virginia under a parent firm known as the General Oil Sales Corp.

Products manufactured at the Texas City plant will be moved in tankships to unloading terminals of the Eastern marketing group companies maintained at Baltimore and at City Point, Virginia.

Because of Republic Oil Refining Co.'s affiliation with Big Lake Oil Co.'s, through that producing firm's partial stock ownership in it, the Texas City plant will operate on an assured supply of light gasoline crude produced in the West Texas field.

Big Lake deep pay crude tests from 56 to 64 degrees, A.P.I. gravity, averaging approximately 61 degrees. It represents that part of the Big Lake field production which comes from the Silurian and Ordovician pay levels found at depths ranging from 8200 to 8900 feet; the deepest oil development in the world.

D. W. Hovey, at one time connected with the Waverly Oil Works in Pennsylvania, is vice president in charge of the Republic Oil Refining Co.'s Texas City construction. With him is associated L. B. Morgan as traffic manager. Both maintain offices in the Second National Bank building at Houston.

J. B. McMillan, general sales manager of Republic Oil Co., who will handle the output of the Texas City plant in connection with present activities, has been spending the last few weeks in Houston.

Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect April 6

	Price F.O.B. Group 3	*Price F.O.B. Point of Origin*	*If for Particular Destination*
Oklahoma	3.50 –4.00	3.50 –4.00	
Kansas	3.50 –3.75		S. O. Neb. & Indiana Territories, etc.
Kansas		4.00 –4.25	Kansas only.
North Texas	3.375–3.625	3.375–3.625	
West Texas	3.375–3.625	3.375–3.625	
Louisiana-Arkansas	3.625–3.75		Michigan, Ohio and Indiana.
Louisiana-Arkansas		4.00	State or differential haul.
Indiana-Illinois	3.50–4.25	*	S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from Indiana and Illinois refineries, according to conditions and freight rates; no prices F. O. B. point of origin can be given.

Chicago Tank Car Market

CHICAGO, April 4

THE Chicago market marked time the past week. Gasoline demand, both from spot and contract buyers, was reported satisfactory by most sellers. Sales of U. S. Motor gasoline, for prompt shipment, generally ranged from 3.375 to 3.75 cents. No sales of Motor for shipment over the remainder of April were reported under 3.50 cents. A number of sellers reported an excellent demand for kerosine; others said this product was quiet. Distillate, gas and fuel oils showed little change from the preceding week.

Following prices represent majority of sales made on Group 3 freight basis, although shipments may originate in other refining districts, such as North and West Texas, Arkansas, Indiana, Illinois, Kentucky, etc.

	Prices April 6	Prices March 30	Prices March 23
58-60 U. S. Motor, 437 e.p.	3.375– 3.75	3.50 – 3.875	3.50 – 3.875
†56-62 400-437 e.p. anti-knock gasoline	3.75 – 4.875	3.875– 4.875	3.875– 4.875
60-62 437 e.p. gasoline	3.50 – 3.875	3.50 – 3.875	3.50 – 3.875
60-62 400 e.p. gasoline	3.625– 4.00	3.625– 4.00	3.625– 4.00
64-66 375 e.p. gasoline	4.125– 4.375	4.125– 4.50	4.25 – 4.50
68-70 350-360 e.p. gasoline	4.375– 4.875	4.375– 4.875	4.50 – 4.875
*Domestic Aviation Gasoline	5.75 – 6.125	6.00 – 6.25	6.00 – 6.25
41-43 w.w. kerosine	2.625– 3.00	2.625– 3.00	2.625– 3.00
42-44 w.w. kerosine	2.875– 3.125	2.875– 3.125	2.875– 3.125
38-40 p. w. distillate	2.25 – 2.50	2.25 – 2.50	2.25 – 2.625
38-40 straw distillate	2.25 – 2.375	2.25 – 2.375	2.25 – 2.50
32-36 ordinary dark gas oil	1.375– 1.50	1.375– 1.625	1.50 – 1.75
32-36 dark zero gas oil	2.00 – 2.125	2.00 – 2.25	2.00 – 2.25
32-36 straw zero gas oil	2.125– 2.25	2.125– 2.375	2.125– 2.375
28-30 zero fuel oil (per bbl.)	$0.75 –$0.775	$0.75 –$0.80	$0.75 –$0.80
28-30 fuel oil (per bbl.)	$0.75 –$0.775	$0.75 –$0.775	$0.75 –$0.775
24-26 fuel oil (per bbl.)	$0.525–$0.575	$0.525–$0.575	$0.525–$0.575
18-22 fuel oil, low sulfur (per bbl.)	$0.425–$0.475	$0.425–$0.475	$0.45 –$0.475
18-22 fuel oil, high sulfur zero (per bbl.)	$0.45 –$0.475	$0.45 –$0.50	$0.45 –$0.50
14-16 fuel oil (per bbl.)	$0.375–$0.425	$0.375–$0.425	$0.375–$0.425

*Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% recovery at 221°; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

†Over 45% benzol equivalent. Prices represent quotations and sales.

Roy Wight Dead, Grover Shaw Hurt in Wreck

HOUSTON, April 3.—Roy Wight, 31, salesman for the Texas Petroleum Products Co., San Antonio, died April 1 from injuries sustained in an automobile accident near Natalia, on the Loredo highway, the previous day. The car in which he was riding with Grover C. Shaw, president of the company, was overturned. Mr. Shaw also sustained severe injuries, but was reported recovering.

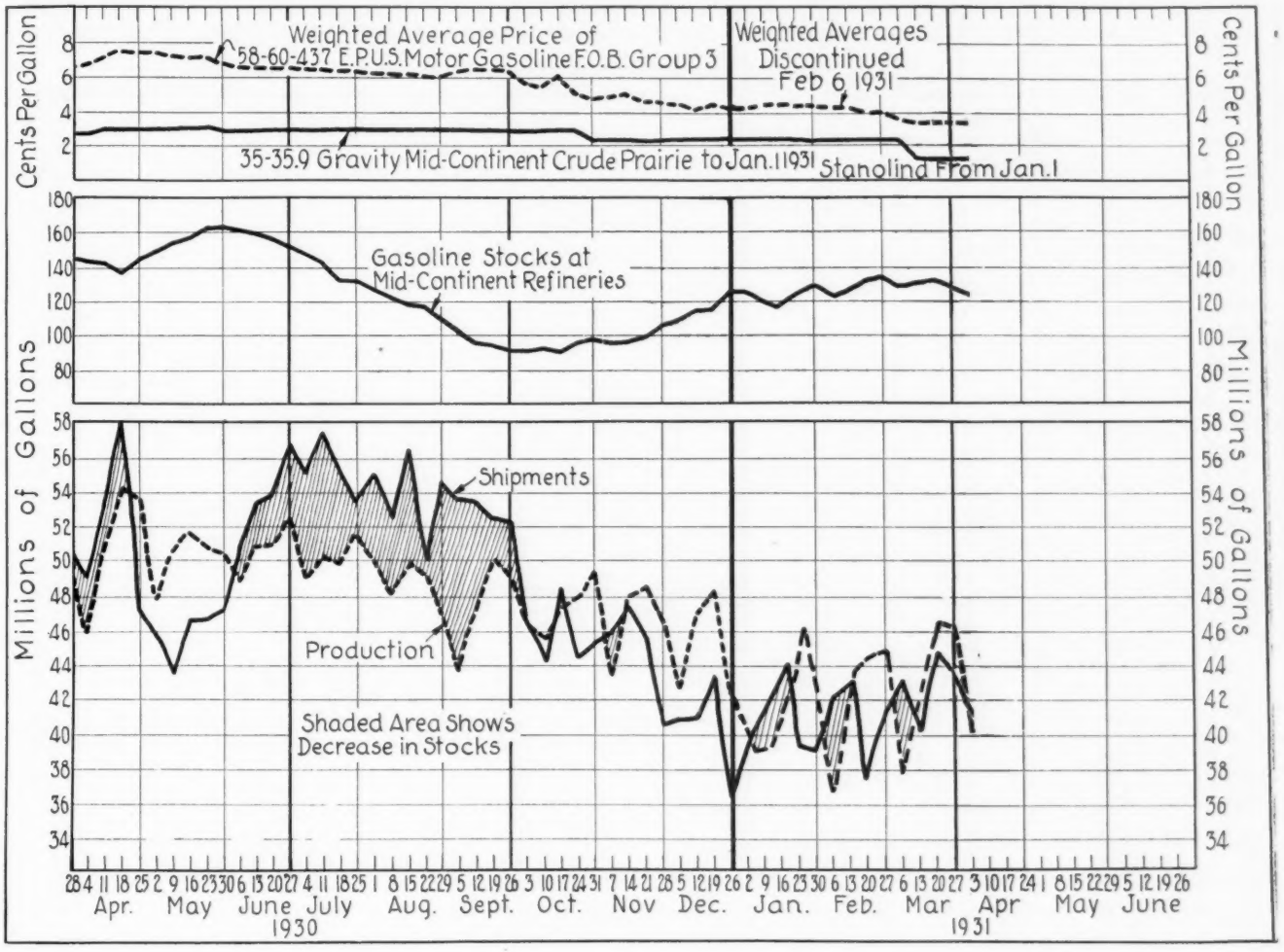
Mr. Wight had been connected with the Texas Oil Products Co. about two years. Previously he was associated with W. B. (Jack) Pape in the Dependable Oil Co., and prior to that with other San Antonio marketing firms.

Petroleum Products Moves Offices

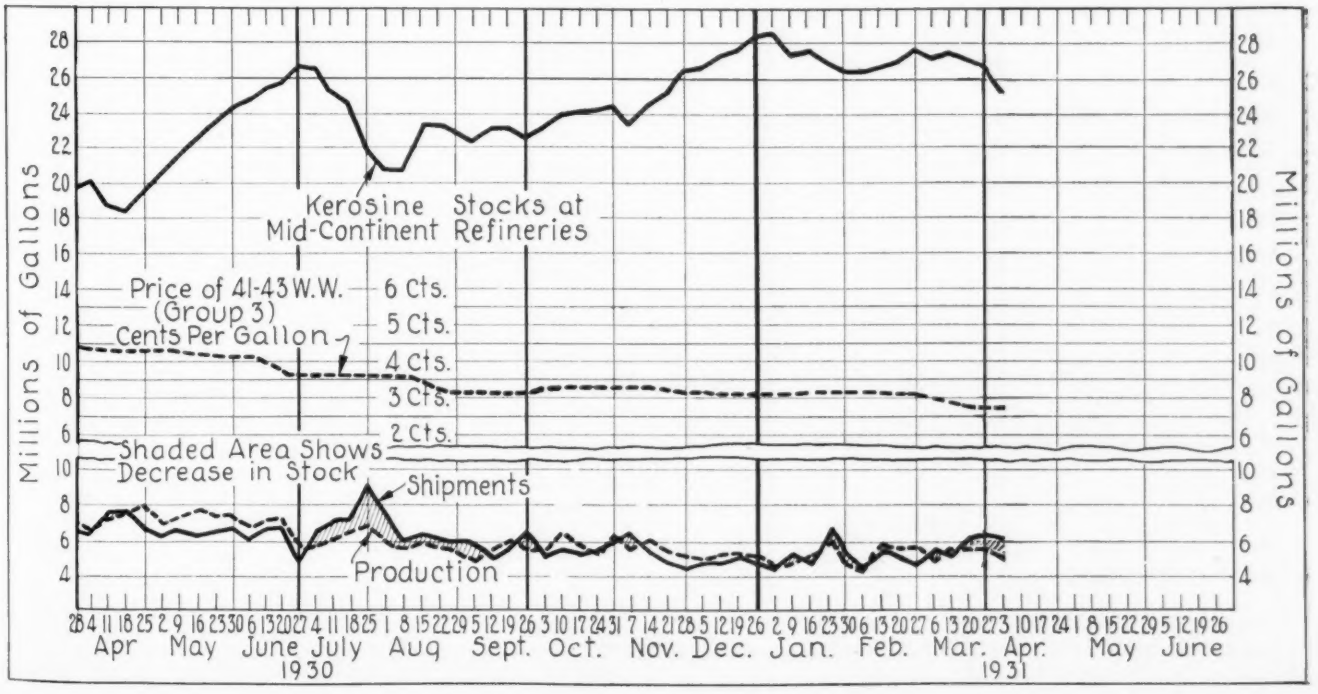
KANSAS CITY, Mo.—Larger quarters in the Bryant Bldg. will be occupied after April 11 by Petroleum Products, Inc., one of the newer wholesale tank car marketing companies in this territory. The company specializes in the sale of domestic and industrial fuels, according to Lee R. Saunders, vice president and general manager.

Barometer of Mid-Continent Refinery Market—Week Ending April 3

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News


Cents Per Gallon
Weighted Average Price of 58-60-437 E.P.U.S. Motor Gasoline F.O.B. Group 3
Weighted Averages Discontinued Feb 6 1931
35-35.9 Gravity Mid-Continent Crude Prairie to Jan. 1 1931
Stanolind From Jan. 1
Gasoline Stocks at Mid-Continent Refineries
Millions of Gallons
Shipments
Production
Shaded Area Shows Decrease in Stocks
Apr. May June July Aug. Sept. Oct. Nov Dec. Jan. Feb. Mar Apr May June
1930
1931

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 98



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown in tank car lots, f.o.b. Refinery. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices April 6	Prices March 30	Prices March 23
48-50 450 e.p. naphtha...	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
50-52 450 e.p. naphtha...	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
56-58 450 e.p. gasoline...	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
58-60 450 e.p. gasoline...	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
58 60 U.S. Motor 437 e.p.	3.50 – 4.00	3.50 – 4.00	3.50 – 4.00
60-62 437 e.p. gasoline...	3.625– 4.125	3.625– 4.125	3.625– 4.125
60-62 400 e.p. gasoline...	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25
64-66 390 e.p. gasoline...	4.25	4.25	4.25
64-66 375 e.p. gasoline...	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
68-70 350-360 e.p. gasoline	4.75 – 4.875	4.75 – 4.875	4.75
‡Domestic Aviation Gasoline.....	5.25 – 6.00	5.25 – 6.00	5.25 – 6.00

‡Prices based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% rec. at 221°; 90% at 311°; 96% at 347°; end point, 374°F. Fighting grade in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

52-54 Naphtha.....	5.125– 5.50	5.25 – 5.50	5.375– 5.50
54-56 Naphtha.....	5.125– 5.50	5.25 – 5.50	5.375– 5.50
58-60 U.S. Motor 437 e.p.	5.25 – 5.50	5.25 – 5.50	5.50 – 5.75
60-62 400-410 e.p. gasoline	5.50 – 5.75	5.625– 6.00	5.75 – 6.00
64-66 390 e.p. gasoline...	6.00 – 6.25	6.00 – 6.25	6.00 – 6.50
68-70 350-360 e.p.....	6.75 – 7.25	6.75 – 7.25	7.00 – 7.50

OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)

U. S. Motor Gasoline			
Ohio, delivery at any point.....	8.00	8.00	8.00

KANSAS (F. o. b. refinery Kansas destination)

58-60 U.S. Motor 437 e.p.	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25
60-62 437 e.p. gasoline...	4.125– 4.375	4.125– 4.375	4.125– 4.375
60-62 400 e.p. gasoline...	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
64-66 375 e.p. gasoline...	4.75 – 5.00	5.00	5.00

NORTH TEXAS (F. o. b. North Texas refineries)

56-58 450 e.p. gasoline...	3.375– 3.50	3.50	3.50
58-60 450 e.p gasoline...	3.375– 3.50	3.50	3.50
58-60 U.S. Motor 437 e.p.	3.375– 3.625	3.50 – 3.75	3.50 – 3.75
60-62 400 e.p. gasoline...	3.625– 4.00	3.625– 4.00	3.625– 4.00
64-66 390 e.p. gasoline...	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25
64-66 375 e.p. gasoline...	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
68-70 350-360 e.p. gasoline	4.50 – 4.75	4.50 – 4.75	4.50 – 4.75

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

50-52 naphtha.....	3.375– 3.50	3.375– 3.50	3.375– 3.50
58-60 437 e.p. gasoline...	3.375– 3.50	3.375– 3.625	3.375– 3.625
58-60 U.S. Motor 437 e.p.	3.375– 3.625	3.50 – 3.75	3.50 – 3.75

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U.S. Motor 437 e.p.	4.00	4.00	4.00

ARKANSAS (Ark., N. La. and Miss. destination)

58-60 U.S. Motor 437 e.p.	4.00	4.00	4.00

CALIFORNIA (3c tax to be added to California gasoline prices if used in state.)

54-58 U.S. Motor 437 e.p.	3.25 – 4.50	3.75 – 4.25	3.75 – 4.50
54-58 U.S. Motor, for outside state shipment....	3.25 – 4.50	3.75 – 4.25	3.75 – 4.50
58-61 375-400 e.p. gasoline	4.50 – 5.00	4.75 – 5.50	5.00 – 6.00
42-45 Engine Distillate 445-480 e.p.....	3.75 – 4.50	3.75 – 4.25	4.00 – 4.50

NATURAL GASOLINE

(Note: End point of all grades, not over 375F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA (F. o. b. Oklahoma refineries)

Grade AA, 80-87.9, 90% Recovery.....	2.25	2.25 – 2.50	2.625– 2.75
Grade A, 72-79.9, 90% Recovery.....	2.375– 2.50	2.50 – 2.625	2.625– 2.75
Grade BB, 84-92, 85% Recovery.....	1.875– 2.00	2.125– 2.25	2.25 – 2.375
Grade B, 76-83.9, 85% Recovery.....	2.125	2.25	2.375– 2.50
Grade C, 80-92, 78% Recovery.....	1.875– 2.00	2.00 – 2.25	2.125– 2.25

NORTH TEXAS (F. o. b. Breckenridge)

Grade AA, 80-87.9, 90% Recovery.....	2.25	2.25 – 2.50	2.625– 2.75
Grade A, 72-79.9, 90% Recovery.....	2.375– 2.50	2.50 – 2.625	2.625– 2.75
Grade BB, 84-92, 85% Recovery.....	1.875– 2.00	2.125– 2.25	2.25 – 2.375
Grade B, 76-83.9, 85% Recovery.....	2.125	2.25	2.375– 2.50
Grade C, 80-92, 78% Recovery.....	1.875– 2.00	2.00 – 2.25	2.125– 2.25

NORTH LOUISIANA (F. o. b. Monroe District)

Grade AA.....	†2.25	†2.50	†2.75
Grade BB.....	†2.00	†2.25	†2.375
Grade C.....	†2.00	†2.25	†2.25

CALIFORNIA (F. o. b. California refineries)

75-85, 375-390 e.p. for blending.....	3.25 – 4.00	3.50 – 4.25	4.00 – 4.50

BURNING OILS

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

45 w.w. kerosine.....	4.50 – 4.75	4.50 – 4.75	4.625– 4.875
46 w.w. kerosine.....	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
47 w.w. kerosine.....	5.00 – 5.25	5.00 – 5.25	5.00 – 5.375
300 mineral seal.....	5.25 – 5.50	5.25 – 5.50	5.50 – 6.00

OKLAHOMA (F. o. b. Oklahoma refineries)

41-43 w.w. kerosine.....	2.75 – 3.00	2.75 – 3.00	2.625– 3.00
42-44 w.w. kerosine.....	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25

KANSAS (F. o. b. refinery Kansas destination)

41-43 w.w. kerosine.....	3.25	3.25	3.25
42-44 w.w. kerosine.....	3.50	3.50	3.50

NORTH TEXAS (F. o. b. North Texas refineries)

40-42 w.w. kerosine.....	2.50 – 2.625	2.50 – 2.625	2.50 – 2.625
41-43 w.w. kerosine.....	2.625– 2.875	2.75 – 3.00	2.75 – 3.00

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

41-43 w.w. kerosine.....	3.50	3.50	3.50
42-44 w.w. kerosine.....	3.75	3.75	3.75

ARKANSAS (Ark., N. La. and Miss. destination)

41-43 w.w. kerosine.....	3.50	3.50	3.50

CALIFORNIA (F. o. b. California refineries)

38-40 w.w. kerosine.....	4.00 – 4.50	4.75 – 5.50	4.50 – 5.00

NEUTRAL OIL

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

Vis.	(Viscosity at 70° F.)		
200 No. 3 Assoc. Filt....	†22.00 –23.00	†22.00 –23.00	†22.50 –23.00
180 No. 3 Assoc. Filt....	†19.00 –20.00	†19.00 –20.00	†19.50 –20.50
150 No. 3 Assoc. Filt....	†17.00 –18.00	†17.00 –18.00	†17.00 –18.00

Note: Low cold test neutral oils are quoted approximately 6c per gal. higher than prices shown above.

	(Non Viscous)		
34 Grav. 330-340 Flash..	5.25 – 6.00	5.50 – 6.00	5.50 – 6.00

****MID-CONTINENT** (F. o. b. Mid-Continent refineries)

Vis. Color	(Viscosity at 100° F.)		
100—No. 2.....	5.25	5.25	5.25
150—No. 3.....	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
150—No. 4.....	6.50	6.50	6.50
180—No. 3.....	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
180—No. 4.....	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
180—No. 5.....	7.50	7.50	7.50
200—No. 3.....	9.50	9.50	9.50
200—No. 4.....	8.50	8.50	8.50
200—No. 5.....	8.25	8.25	8.25
220—No. 3.....	10.00 –10.50	10.00 –10.50	10.00 –10.50
220—No. 4.....	9.75 –10.25	9.75 –10.25	9.75 –10.25
220—No. 5.....	10.00 –10.25	10.00 –10.25	10.00 –10.25
240—No. 3.....	12.00	12.00	12.00
240—No. 4.....	10.50	10.50	10.50
240—No. 5.....	10.50 –11.00	10.50 –11.00	10.50 –11.00
280—No. 3.....	14.00	14.00	14.00
280—No. 4.....	13.00	13.00	13.00
280—No. 5.....	12.00	12.00	12.00

Note: Quotations for 0 to 10 cold test neutral oils are 1 to 2 cents higher depending on the grade.

****Prices represent Quotations and Sales.**

†Prices nominal ††Only one refiner quoting *Quotations only

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, except where $ is shown in tank car lots, f.o.b. Refinery. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL (F. o. b. Gulf Coastal refineries)

Vis. Color	Prices April 6 (Viscosity at 100° F., pour test 0)	Prices March 30	Prices March 23
100—No. 2 Pale	5.50 – 6.25	5.50 – 6.25	5.50 – 6.25
200—No. 3 Pale	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300—No. 3 Pale	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
500—No. 3½ Pale	10.00 –10.50	10.00 –10.50	10.00 –10.50
750—No. 4 Pale	11.50 –12.50	11.50 –12.50	11.50 –12.50
1200—No. 4 Pale	14.50 –15.00	14.50 –15.00	14.50 –15.00
2000—No. 4-5 Pale	15.50 –16.00	15.50 –16.00	15.50 –16.00
200—No. 5½ Red Oil	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
300—No. 5½ Red Oil	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
500—No. 6 Red Oil	9.00 –10.00	9.00 –10.00	9.00 –10.00
750—No. 6 Red Oil	11.25 –11.75	11.25 –11.75	11.25 –11.75
1200—No. 5-6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00
2000—No. 6 Plus Red Oil	15.50 –16.00	15.50 –16.00	15.50 –16.00

‡CALIFORNIA (F. o. b. California refineries)

Vis. Color	(Viscosity at 100° F.)		
100—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200—No. 3	11.50	11.50	11.50
300—No. 3	13.00	13.00	13.00
450—No. 3	15.50	15.50	15.50
550—No. 3	16.50	16.50	16.50
600—No. 3	17.00	17.00	17.00
200—No. 5	11.00	11.00	11.00
300—No. 5	12.00	12.00	12.00
400—No. 5	14.00	14.00	14.00
500—No. 5	15.00	15.00	15.00
600—No. 5	16.00	16.00	16.00
700—No. 7	18.00	18.00	18.00

‡Neutral oils not manufactured commercially in California.

CYLINDER STOCKS

MID-CONTINENT (F. o. b. Mid-Continent refineries)

(Cylinder stock prices represent quotations and sales to domestic jobbers only).

190-200 Vis. D at 210° Brt. St.	23.00	23.00	23.00
150-160 Vis. D at 210° Brt. St., 0-10 cold test	16.00 –18.00	17.50 –18.00	17.50 –18.00
150-160 Vis. D at 210° Brt. St., 10-25 cold test	15.00 –16.00	15.00 –17.00	15.00 –17.00
150-160 Vis. D Brt. Stock, 25-40 cold test	14.50 –15.00	15.00	15.00
150-160 Vis. E 210° Brt. St.	15.00 –16.00	15.00 –16.00	15.00 –16.00
600 St. Ref. Olive Green	6.00 – 8.00	6.00 – 8.00	6.00 – 8.00
600 St. Ref. Dark Green	4.50 – 5.50	4.50 – 5.50	4.50 – 5.50
Black Oil	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00

PENNSYLVANIA (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

600 Steam Refined, filterable	8.25 – 8.75	8.25 – 8.75	8.25 – 8.75
650 Steam Refined	11.50 –12.00	11.50 –12.50	11.75 –12.50
600 Flash	12.50 –13.50	13.00 –14.00	13.50 –14.00
630 Flash	18.00 –20.00	18.50 –20.00	18.50 –20.00
600 Warren E	12.00 –13.00	12.00 –13.00	12.25 –13.00
600 Oil City E	†12.00 –12.50	†12.00 –12.50	12.00 –13.00
600 D Filtered	†14.50 –15.00	†14.50 –15.00	†14.50 –15.00
Cold Test Stocks, 140-150 vis. at 210°, 540-550 flash, No. 8 color, ‡20 pour test and below	18.50 –19.00	18.50 –19.00	18.50 –19.00
No. 8 color, ‡25 and 35 pour test	18.00 –19.00	18.00 –19.00	18.00 –19.00
No. 8 color, ‡40 pour test and above	17.50 –18.00	18.00 –19.00	18.00 –19.00

‡Beginning March 16, pour tests changed to those shown above. Were formerly: 25 pour test; 25-35 pour test; and above 35 pour test, respectively.

WAX

PENNSYLVANIA (Per pound, F. o. b. New York)

122-124 white crude scale a.m.p.	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
124-126 white crude scale, a.m.p.	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375

****OKLAHOMA** (Per pound in barrels; in a few instances, per pound in burlap bags; F. o. b. Oklahoma refineries.)

124-126 White Crude Scale, a.m.p.	2.00 – 2.125	2.00	2.00

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	2.875– 3.25	2.875– 3.25	3.00 – 3.25
30-34 fuel oil	2.875– 3.00	3.00 – 3.25	3.125– 3.25
28-32 fuel oil	2.875– 3.00	3.00 – 3.25	3.125– 3.25

Note: Zero cold test fuel oils were quoted 0.25c to 0.50c higher than prices shown above up to March 30.

†Prices nominal ††Only one refiner quoting *Quotations only

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices April 6	Prices March 30	Prices March 23
38-40 straw distillate	2.25 – 2.50	2.25 – 2.50	2.375– 2.625
36-38 straw distillate	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
32-36 straw gas oil	2.00 – 2.25	2.00 – 2.25	2.00 – 2.25
32-36 straw gas oil zero	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
32-36 dark gas oil	1.75	1.75	1.75
32-36 dark gas oil zero	2.00 – 2.25	2.00 – 2.25	2.00 – 2.25
28-30 zero fuel oil(per bbl.)	$0.775–$0.825	$0.775–$0.825	$0 80 –$0.85
28-30 fuel oil (per bbl.)	$0.75 –$0.80	$0.75 –$0.80	$0 75 –$0 80
26-28 fuel oil (per bbl.)	$0.65 –$0.70	$0.65 –$0.70	$0 65 –$0.70
24-26 fuel oil (per bbl.)	$0.50 –$0.55	$0.50 –$0.55	$0 50 –$0.55
22-26 fuel oil (per bbl.)	$0.475–$0.50	$0.475–$0.50	$0 475–$0 50
18-22 fuel oil (per bbl.)	$0.425–$0.45	$0.425–$0.45	$0.425–$0.45
16-20 fuel oil (per bbl.)	$0.375–$0.425	$0.375–$0.425	$0.375–$0.425
14-16 fuel oil (per bbl.)	$0.35 –$0.40	$0.35 –$0.40	$0.35 –$0.40

KANSAS (F. o. b. refinery Kansas destination)

38-40 straw distillate	2.75 – 3.00	2.75 – 3.00	2.75 – 3.00
36-38 straw distillate	2.625– 2.75	2.75	2.75
32-36 straw gas oil	2.50 – 2.625	2.50 – 2.625	2.50 – 2.625
18-22 fuel oil (per bbl.)	$0.50 –$0.60	$0.50 –$0.60	$0.50 –$0.60
10-14 fuel oil (per bbl.)	$0.40 –$0.45	$0.425–$0.50	$0.425–$0.50

NORTH TEXAS (F. o. b. North Texas refineries)

38-40 straw distillate	2.25 – 2.50	2.25 – 2.50	2.375– 2.50
38-40 p.w.treated distillate	2.25 – 2.625	2.375– 2.625	2.50 – 2.75
32-36 gas oil, cracked	1.75 – 2.00	1.75 – 2.00	1.75 – 2.00
32-36 St. reduced gas oil	1.50 – 1.75	1.50 – 1.75	1.50 – 1.75
24-26 fuel oil (per bbl.)	$0.375–$0.425	$0.375–$0.425	$0.375–$0.425
20-24 fuel oil (per bbl.)	$0.35 –$0.40	$0.35 –$0.40	$0.35 –$0.40
18-22 fuel oil (per bbl.)	$0.325–$0.35	$0.325–$0.35	$0.325–$0.35

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment.

34-38 gas oil	1.875– 2.00	2.00	2.00
30-32 gas oil	1.50	1.50	1.50
28-30 zero gas oil	2.00 – 2.125	2.00 – 2.25	2.00 – 2.25
18-22 fuel oil (per bbl.)	$0.375–$0.40	$0.375–$0.40	$0.375–$0.40

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	2.375– 2.50	2.50	2.50
32-36 gas oil, straw	2.375– 2.50	2.50	2.50
14-16 fuel oil (per bbl.)	$0.60 –$0.70	$0.60 –$0.70	$0.60 –$0.70

ARKANSAS (Ark., N. La. and Miss. destination)

32-36 gas oil, straw	2.25 – 2.50	2.25 – 2.50	2.50
32-36 dark gas oil	2.25 – 2.50	2.25 – 2.50	2.50
28-30 gas oil	2.125– 2.25	2.125– 2.25	2.25
20-24 fuel oil (per bbl.)	$0.75	$0.75	$0.75
9-12 fuel oil (per bbl.)	$0.65	$0.65	$0.65
Black oil	3.25	3.25	3.25

CALIFORNIA (F. o. b. San Joaquin Valley. Nominal pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

14-18 fuel oil (per bbl.)	$0.35 –$0.50	$0.45 –$0.55	$0.40 –$0.55
14-18 Bunker oil (per bbl.)	$0.55 –$0.80	$0.58 –$0.70	$0.60 –$0.85
30-34 gas oil (per bbl.)	$0.70 –$0.80	$0.80 –$0.90	$0.85 –$0.95
27 Plus Diesel oil (per bbl.)	$0.70 –$0.80	$0.75 –$0.85	$0.75 –$0.85

PETROLATUMS

PENNSYLVANIA (Per pound, in barrels, carload lots, f. o. b. Penna. refinery. In tank cars 3/16c to ¼c per pound less.) Two refiners quoting.

Snow White	7.00 – 7.25	7.00 – 7.25	7.00 – 8.00
Lily White	6.125– 6.25	6.125– 6.25	6.125– 7.00
Cream White	5.125– 5.25	5.125– 5.25	5.125– 6.00
Light Amber	2.875– 3.00	2.875– 3.00	2.875– 3.00
Amber	2.625– 2.75	2.625– 2.75	2.625– 2.75
Red	2.00 – 2.50	2.00 – 2.50	2.00 – 2.50

PETROLEUM COKE

****OKLAHOMA** (F. o. b. Oklahoma refineries)

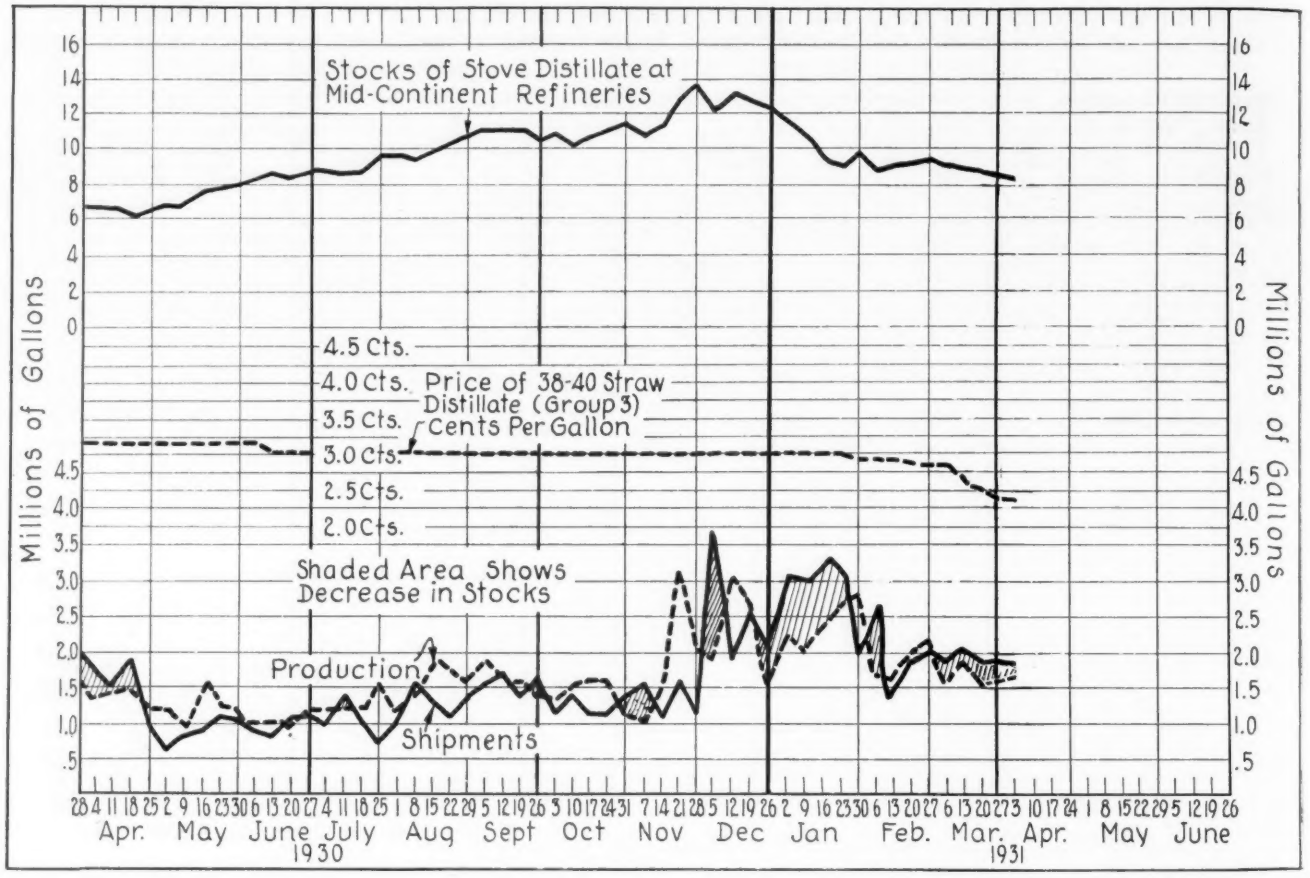
(Per ton in car lots)

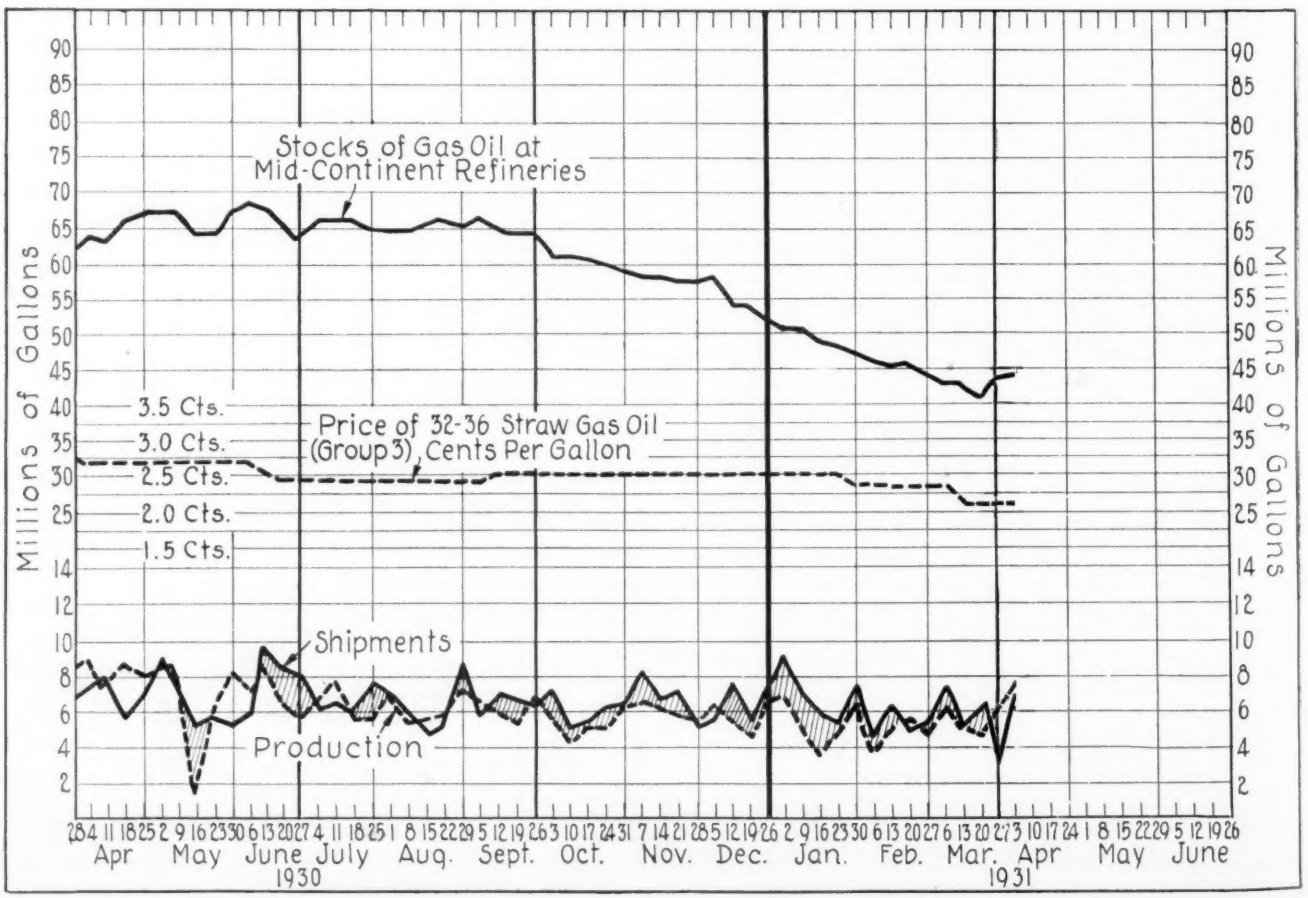
Lump	$4.50 –$5.00	$4.50 –$5.00	$4.50 –$5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

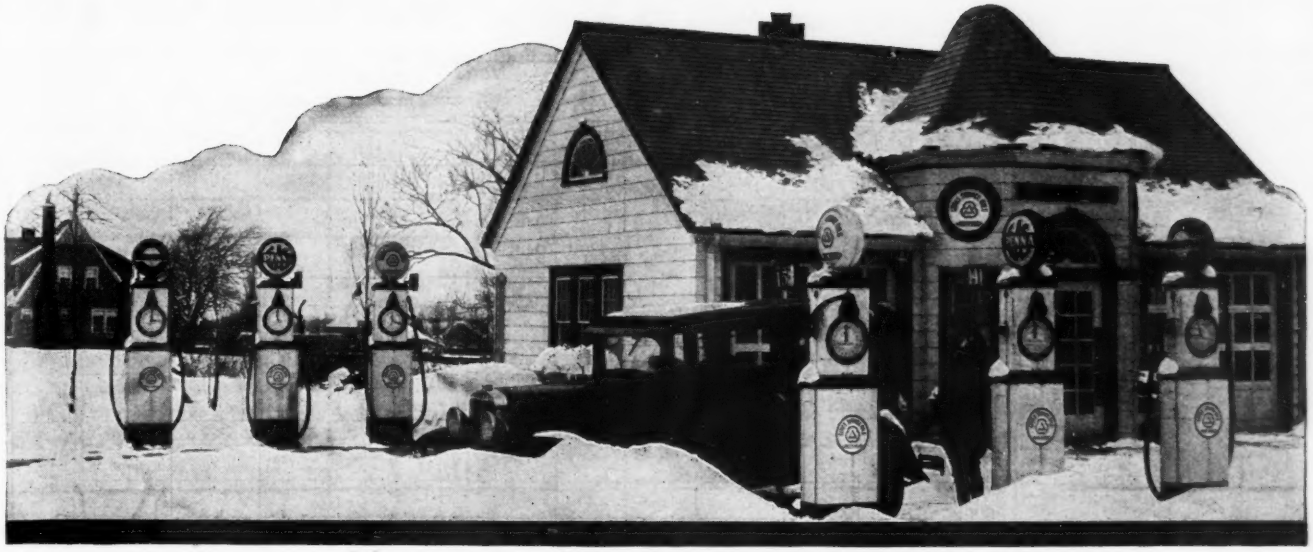
****Prices represent Quotations and Sales**

Barometer of Mid-Continent Refinery Market—Week Ending April 3

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News







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BUFFALO GASOLINE METERS are quality built. Quality compels all-around performance with freedom from adjustments. Quantity production places them within the reach of the price buyer.

The 1931 Buffalo Gasoline Meter, has new and improved features that give it extra long life. For instance—we have replaced the standard aluminum bearing surface of the measuring piston with a more enduring metal because aluminum tends to pick up particles of foreign matter, which become embedded in the bearing surfaces causing excessive friction and wear.

Buffalo Gasoline Meters are built so that they have to be accurate even at slow flows, but the new improvements absolutely avoid any radical or untried principles.

Give the 1931 Buffalo Gasoline Meter a careful endurance test right in your own plant. Gladly will we furnish you with a stock model for this test, entirely without obligation. Address:

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Company.....

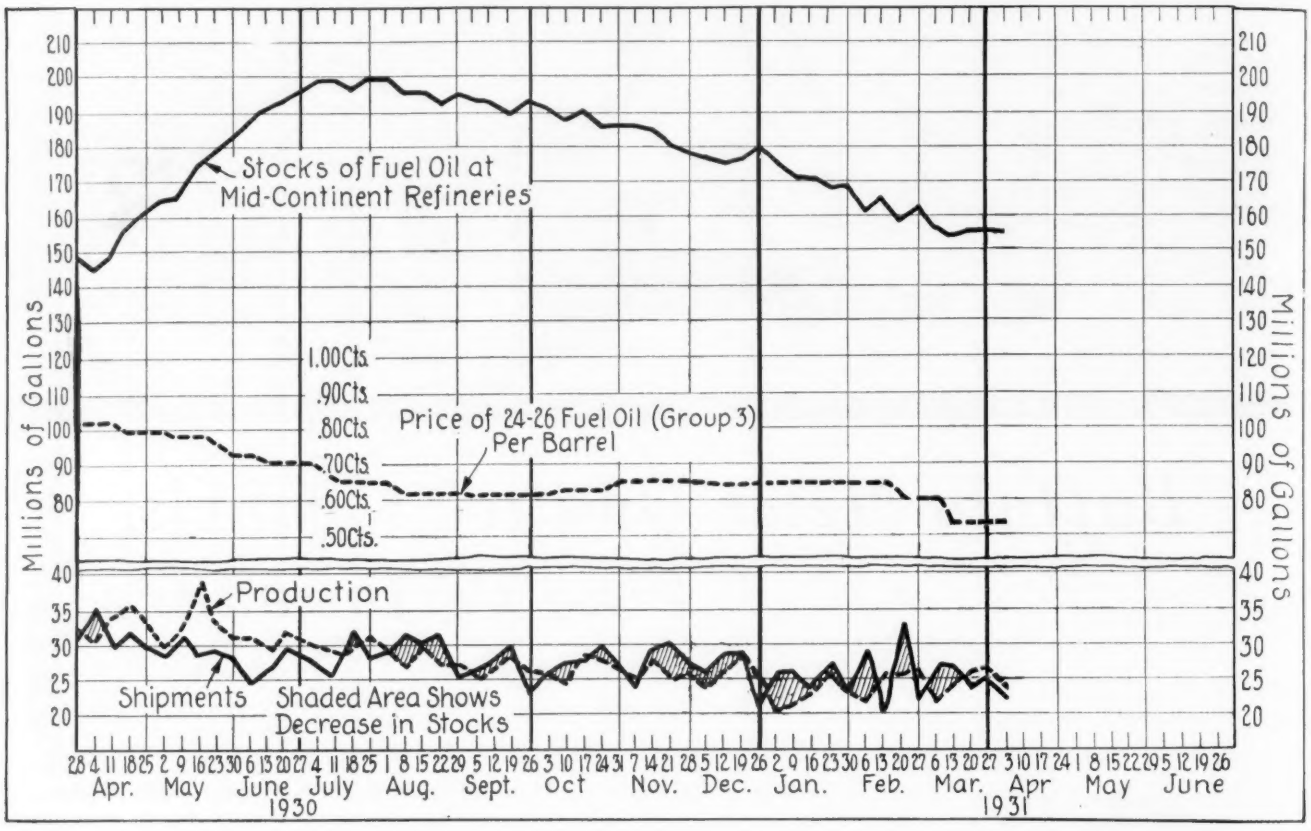
By.....

Street Address.....

City..... *State*.....

Barometer of Mid-Continent Refinery Market—Week Ending April 3

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News



California Refinery Market

Third Crude Cut Sends Prices Still Lower

LOS ANGELES, April 4

LOWER crude oil price structures on the Pacific Coast have caused further reductions in tank car gasoline quotations and have threatened to disturb the heavy oil markets.

Inquiries in the local export market were few and far between and traders could see little prospect of immediate business notwithstanding the lower cost of raw material. Some shippers thought U. S. Motor gasoline could be bought at 4 or possibly 3.875 cents although actual quotations were lacking to substantiate either of these figures.

A New Zealand buyer was reported seeking approximately 7500 cases of gasoline and 5000 cases of kerosine, but suppliers held out little hope of closing the business at existing prices. Other exploratory inquiries were going the rounds but were given scant attention by the trade.

In domestic circles, gasoline prices ranged from 3.25 to 4.50 cents in tank car lots, exclusive of tax. Independent refiners in the Los Angeles Basin offered gasoline freely at 3.25 to 3.75 cents and, although a few quoted a price of 4.25 cents f.o.b. refinery to buyers who were not regular customers, they were not adverse to shading this price 0.50 cent when confronted with actual business. The lower quotations resulted in retail prices of less than 8 cents in the Los Angeles territory.

Under existing conditions there was little variation in quotations for gasoline, kerosine, natural gasoline, and engine distillate. If anything, kerosine was the most active of the group.

In the heavy oils it was noted that quotations were generally lower. Fuel could be bought in the open market at $0.35 to $0.50 per barrel, and gas and diesel oils at $0.70 to $0.80 per barrel.

California Tightens Gas Law Against Evasion

LOS ANGELES, April 2.—California gasoline tax collections will be made on a monthly or weekly basis instead of quarterly, under the new law effective April 1.

The law is aimed primarily to eliminate tax evasions. It provides that distributors are to be bonded.

The bond is to be not less than $1000 and not greater than $100,000, the amount to be twice the average monthly tax of each distributor. Where payment is to be made each week the bond is only one and one-half times the weekly tax.

In lieu of the bond, a distributor may deposit cash, U. S. Government, California State, county or city bonds.

Right is also given to the board to license all manufacturers of natural gasoline, kerosine distillate, or other products that might be used in the manufacture of motor fuel. This is for purpose of simplifying enforcement of act and to insure payment on motor fuel used within the state since

all such operators will be obliged to furnish a record of transactions.

Brokers, jobbers, and wholesale merchants dealing in these products will be licensed to prevent evasion of the tax. If refiners export to customers in other states, export certificates must be prepared as in past.

No gasoline may be sold to by one distributor to another without including tax. If this gasoline is exported claim for refund may be made to the state controller within 45 days. An exception to this provision is that gasoline may be sold for export ex-tax when placed in vessels clearing from a port in the state for a port located outside the state.

In the event the distributor fails to pay the tax within 30 days after close of month, the state controller may sell the property at public auction, to secure any additional amount not covered by the bond. Under the previous amendment the time of payment was 45 days.

Pennsylvania Markets

Trading Quiet

CLEVELAND, April 6.—Trading generally was light in the western Pennsylvania market last week. Prices for several commodities worked lower and other products barely held their own.

Gasoline movement, according to some reports, was on a slightly larger scale but most traders indicated demand was not brisk and hardly satisfactory considering the favorable weather.

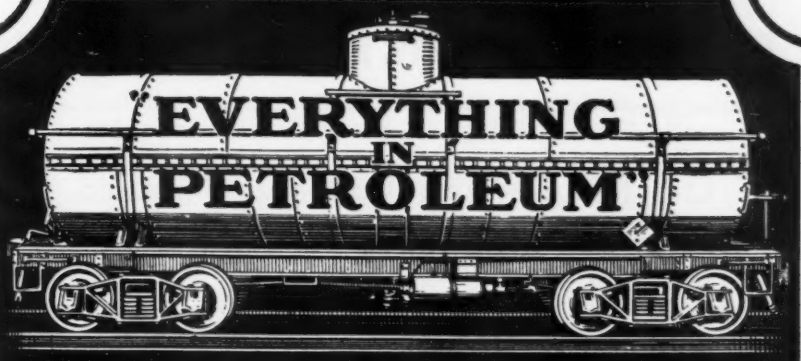
The general market minimum for U. S. Motor gasoline remained at 5.25 cents although increased shading of this figure was reported from a number of sources. Higher gravity gasolines dropped 0.125 cent in price.

Kerosine demand was spotty. Offerings from refineries increased substantially in volume and prices lost some ground. Fuel oils also were quoted 0.125 to 0.25 cent lower. Industrial demand for fuel oil remained at a standstill and demand from refiners for cracking stock was relatively slow.

Cylinder stocks generally were quiet. Several of the high flash grades were offered at lower prices.

Neutral oils were unchanged. Offerings from refineries were a little more liberal but demand was sufficient to the market free of any surplus material.

Bright stock was quiet. High pour test stock was offered 0.5 cent lower at 17.50 cents by one or two sellers although most manufacturers quoted a minimum of 18 cents for all grades.



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with any kind of motor or premium grade gasoline.

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INCREASE ITS ANTI-KNOCK
REDUCE YOUR COST

UNLOAD, STORE AND HANDLE JUST LIKE ORDINARY GASOLINE. NO SPECIAL EQUIPMENT REQUIRED.

WE HAVE SPECIAL ANTIKNOCK NAPHTHAS THAT ENABLE YOU TO TAKE COMPLETE ADVANTAGE OF POSSIBLE SAVINGS.

INVESTIGATE THE POSSIBILITIES.

Ask for Prices and Details.

WILLOCK
OIL CORPORATION
Pittsburgh, Pa.

Eastern Domestic Markets

Gasoline Markets Continue Unsettled

Staff Special
NEW YORK, April 4

EASTERN gasoline markets continued unsettled during the week ended April 4. Tank car prices remained fairly steady while prices for barge lots were reduced by some sellers. Demand for U. S. Motor gasoline was spotty. Jobbers in some sections bought their entire requirements for April, while others continued to purchase on a hand-to-mouth basis. A cargo of California gasoline was reported to be available for North Atlantic delivery at 5.125 cents per gallon.

Regular U. S. Motor gasoline continued to be sold in tank cars at 6.25 cents at New York harbor by several companies who have been active in the spot market. The posted price for tank car shipments at New York harbor was reduced by one major refiner from 6.50 to 6.375 cents. A few sales were reported by the company at this price. Barge lot sales were reported at 5.875 cents and a shade lower by several sellers. Gasoline was said to have been moved profitably out of New York harbor into the New England and Philadelphia markets.

In the Philadelphia district the major suppliers quoted 6.50 cents per gallon for U. S. Motor and no price shading was reported. Buying of tank car lots in the Philadelphia district was not up to expectations. Buyers of barge lots were in some instances paying 6.25 cents delivered but generally speaking they were not purchasing very far ahead.

The Baltimore gasoline market continued unsettled. Several sellers indicated a willingness to accept under 6.50 cents for U. S. Motor in tank cars. One large order was taken around the first of April at approximately 6.25 cents. Another seller reported shipments in tank cars into New York state in competition with New York sellers. Some of the material so moving was not regular U. S. Motor gasoline and a price under 6.25 cents was accepted.

While there was no California gasoline available in the Baltimore or Philadelphia markets, the west coast material offered by New York sellers failed to get a premium over regular U. S. Motor. A cargo of California gasoline was offered to a Baltimore concern at approximately 5 cents delivered, but no deal had been made at this writing.

The spot market in New England continued quiet the past week. Prices remained unchanged at 7 cents, f.o.b. Portland; 6.75 cents at Boston and Providence terminals. In the latter markets, barge lots of U. S. Motor were offered slightly under the tank car prices.

The demand for the light and heavy heating oils has slowed down in both the New England and New York markets. The weather has been mild and fuel oil marketers generally have reported that they look for a decline in their business from now on. The wholesale prices remained generally unchanged at 4.50 cents for gas oil and 5.50 cents for furnace oil. These prices were quoted in both markets.

Kerosine prices remained generally unchanged in all markets. Bunker C fuel oil likewise was unchanged at $1.05 per barrel in both the Boston and New York harbor markets.

Lower prices for diesel oil were announced on April 1 by the Standard Oil Co. of New Jersey. The new schedule puts into effect a flat price of $1.75 per barrel at New York, Baltimore, Norfolk, and Charleston. The reduction was in the amount of 10 cents at all points except Norfolk where the price was reduced 30 cents.

Gulf Coast Markets

Foreign and Domestic Trading Quiet

Staff Special
NEW YORK, April 4

LITTLE activity was noted in the bulk market at the Gulf the past week. There were no foreign inquiries reported for American products. Prices for gasoline remained unchanged in spite of reported offerings of California gasoline at lower prices. A little business was done by sellers of cased goods.

Traders generally reported that little or no business was to be had the past week. Prices for the various materials were indicated by sellers with reservations that if actual business presented itself some shading might take place. Further than that sellers were not inclined to talk or place values on their products.

Domestic buying was at a standstill. Buyers of cargo lots in the North Atlantic markets reported that in view of the light demand in their respective markets there was no occasion for stocking up with large quantities.

A sale of 200 cases of kerosine and 100 cases of U. S. Motor for shipment to the West Indies largely comprised the business done in the market for cased goods. There were no changes in the prices for this class of merchandise.

Prices for kerosine and gas oil in cargo lots were steady. No sales were reported. Cargo lots of grade C bunker oil were again offered at $0.62 per barrel but no sales were reported.

Venezuela Crude

The market for Venezuela crude was exceptionally quiet the past week. Although it was the opinion of some sellers of this oil that a cargo could be had for $0.72 per barrel, f.o.b. deepwater in the Lake Maracaibo region, the opinion was also ventured that the price would advance in proportion to the success of proration activities in both Venezuela and Texas producing fields.

Panuco Crude

No sales were reported in the Panuco crude market. On the basis of the last reported sale of this material the market remained steady at $0.46 per barrel, f.o.b. Tampico.

Wax Markets

Buying at Standstill

NEW YORK, April 4.—Trading of wax in both the New Orleans and New York markets was reported to be at a minimum the past week. Foreign buyers were engaged in the celebration of the various religious observances which take place at this time and accordingly little business was transacted.

Prices for scale and the refined waxes remained generally unchanged in both the New Orleans and New York markets.

Refineries in Poland ran to stills 2,093,000 barrels of crude the first half of 1930, producing nearly 490,000 barrels of gasoline and 610,000 barrels of kerosine.

Head of Callaway Fuel Dies at Milwaukee

MILWAUKEE, April 4. — Edward Callaway, president of the Callaway Fuel Company, Milwaukee, died at his home on March 12, 1931, after a brief illness.

Mr. Callaway was in the fuel business in Milwaukee for 32 years, becoming affiliated with the company after serving in the Spanish-American war and becoming president in 1907.

He was active in civic affairs, being secretary of the Milwaukee Safety Commission; trustee of the Citizens' Bureau; organizer and past president of the Wisconsin Truck Owners' Association; past president of the Milwaukee Motor Club, member Milwaukee Harbor and Rivers Association, and a member of the following organizations: Kiwanis Club, Elk's Club, Milwaukee Athletic Club, Hugh J. McGrath Camp Spanish American War Veterans, Knights of Pythias, and Old Settlers Club.

He is survived by his widow, Marie Callaway; one daughter, Olive Marie, and six sisters.

Harve Kimmell Dies In Auto Accident

WICHITA, April 4.—Harve Kimmell, of Hiawatha, Kan., associated with his father and brother, Jere and Dean, in the Kimmell Oil Co., was burned to death April 2 when his automobile caught fire. Mr. Kimmell was on the Falls City-Hiawatha highway. He was alone in his car. When passing motorists noticed the blazing machine Mr. Kimmell was in the ditch beside the road, his clothing a mass of flames.

Jere Kimmell, who is proprietor of the oil company, was a democratic candidate for lieutenant governor last year. Dean Kimmell is general manager of the company.

New Marketer May Build Stations

RICHMOND, Va.—A new distributor of Cities Service oil products here is the newly organized Commonwealth Service Co., with authorized capital of $500,000. Bulk stations may be built later.

Products will come by tanker and barge from Texas and California. Distribution will cover 40 counties of Virginia.

Officers are: L. W. Hoffman, president of the Broadway Bank & Trust Co., president; A. S. Osbelt, vice president; Collins Denny, Jr., secretary; and H. E. Watts, treasurer.

FOR TIGHTER JOINTS
Three Handy Sizes:
⅛ pint 15c
1 pint 75c
1 quart $1.45
(Postage extra)
GILBERT & BARKER PIPE SEALING COMPOUND
Leaks in gasoline pipe lines can be serious. Use Gilbert & Barker Pipe Sealing Compound. Makes every coupling, tee or elbow tight as a weld. No stock losses. No costly overhauling. Approved by Underwriters.
Order direct from
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COASTAL AND PARAFFINE CRUDES
GASOLINE—LUBRICATING OILS
NAPHTHA—GAS—OILS
WAX—PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

Gulf Refining Company

General Sales Offices:
PITTSBURGH, PA.

District Sales Offices: New York, Boston, Philadelphia, Louisville, Atlanta, Houston, New Orleans

Complete Seaboard Market

(Export Markets for whole year given in OIL HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in some states.)

	Prices April 6	Prices March 30	Prices March 23
U. S. MOTOR GASOLINE			
New York harbor	6.25 – 6.50	6.25 – 6.50	6.25 – 6.75
Portland district	7.00	7.00	*7.75 – 8.00
Boston district	6.75	6.75	*7.40 – 7.50
Providence district	6.75	6.75	*8.25 – 8.50
Philadelphia district	6.50	6.50	6.75 – 7.00
Baltimore district	6.25 – 6.50	6.50	6.50
Norfolk district	6.50	6.50	7.00
Charleston district	6.50	6.50	7.00
Savannah district	6.50	6.50	7.00
Jacksonville district	6.50	6.50	7.00
CALIFORNIA U. S. MOTOR GASOLINE			
New York harbor	†6.50	†6.75	†6.75
Philadelphia district	†6.50	†6.75	†7.00
Baltimore district	†6.50	†6.50	†6.50
‡DOMESTIC AVIATION GASOLINE			
New York harbor	10.00 –12.00	10.00 –12.00	10.00 –12.00
Philadelphia	10.00 –12.00	10.00 –12.00	10.00 –12.00
Baltimore	11.00 –12.00	11.00 –12.00	11.00 –12.00
Boston	11.50 –13.00	11.50 –13.00	11.50 –13.00
WATER WHITE KEROSINE			
New York harbor	5.75 – 6.00	5.75 – 6.00	6.00
Philadelphia district	6.00	6.00	6.00
Baltimore district	6.00	6.00	6.00
GAS OIL: 28-34 Gravity			
New York harbor	4.50	4.50	4.50
Boston district	4.50	4.50	4.50
FURNACE OIL: 36-40 Gravity			
New York harbor	5.50	5.50	5.50
Boston district	5.50	5.50	5.50
GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$1.75	$1.85	$1.85

†Nominal. *Delivered prices.

‡Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167°F. and not less than 122°F.; 50% recovery at 221°; 90% at 311°; 96% at 347° end point 374°F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

New York Export Market

(Lubricating oils are per gal. in bbls. F.a.s. New York)

	April 6	March 30	March 23
CYLINDER OILS (Pennsylvania Products)			
Bright stock, No. 8 color	23.50 –25.00	23.50 –25.00	23.50 –25.00
Bright stock, No. 6½ color diluted	22.50 –24.00	22.50 –24.00	22.50 –24.00
600 D filtered	22.50 –25.00	22.50 –25.00	22.50 –25.00
600 Warren E filtered	18.00 –21.00	18.00 –21.00	18.00 –21.00
600 stm. refd. unfiltered	14.50 –16.00	14.50 –16.00	14.50 –16.00
650 stm. refd. unfiltered	18.00 –20.00	18.00 –20.00	18.00 –20.00
600 flash steam refined	18.50 –20.00	18.50 –20.00	18.50 –20.00
630 flash, steam refined	24.00 –26.00	24.00 –26.00	24.00 –26.00
RED PARAFFIN OILS (Vis. 100°)			
300 vis. No. 6½ color	17.00 –20.00	17.00 –20.00	17.00 –20.00
250 vis. No. 6 color	16.50 –17.50	16.50 –17.50	16.50 –17.50
200 vis. No. 6 color	14.75 –17.00	14.75 –17.00	14.75 –17.00
PALE PARAFFIN OILS (Vis. 100°)			
230 vis. No. 3¾ color	21.50	21.50	21.50
180 vis. No. 3¼ color	18.00 –20.00	18.00 –20.00	18.00 –20.00
100 vis. No. 2¼ color	12.50 –15.00	12.50 –15.00	12.50 –15.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	.....	.....	28.00 –30.00
500 vis. No. 6½ color	.....	.....	26.50 –29.50
400 vis. No. 7¼ color	.....	.....	25.00 –28.00
300 vis. No. 6 color	.....	.....	22.00 –26.00
200 vis. No. 6 color	.....	.....	21.00 –23.50

Wax Market

(Melting points are A.M.P. method. Prices in cents per pound, f.a.s. carload lots.)

NEW YORK	April 6	March 30	March 23
124-126 Yellow crude scale	2.20	2.20	2.20
122-124 White crude scale	2.20 – 2.25	2.20 – 2.25	2.20 – 2.25
124-126 White crude scale	2.20 – 2.25	2.20 – 2.25	2.20 – 2.25
123-125 Fully refined	3.25	3.25	3.25
125-127 Fully refined	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
128-130 Fully refined	3.375– 3.50	3.375– 3.50	3.375– 3.50
130-132 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
133-135 Fully refined	4.375– 4.50	4.375– 4.50	4.375– 4.50
135-137 Fully refined	4.625– 4.75	4.625– 4.75	4.625– 4.75
NEW ORLEANS			
124-126 Yellow crude scale	2.15	2.15	2.15
122-124 White crude scale	2.20 – 2.25	2.20 – 2.25	2.20 – 2.25
124-126 White crude scale	2.20 – 2.25	2.20 – 2.25	2.20 – 2.25
123-125 Fully refined	3.25	3.25	3.25
125-127 Fully refined	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
128-130 Fully refined	3.375– 3.50	3.375– 3.50	3.375– 3.50
130-132 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
133-135 Fully refined	4.375	4.375	4.375

Gulf Coast Bulk Market

(Prices are f. o. b. Gulf oil terminals representing sellers' opinions covering bulk shipments of 20,000 barrels or more, for export and / or coastwise shipment unless otherwise noted.)

GASOLINE	Prices April 6	Prices March 30	Prices March 23
U. S. Motor	4.50 – 5.00	4.50 – 5.00	4.75 – 5.00
60-62, 400 e.p.	4.75 – 5.25	4.75 – 5.25	5.25 – 5.375
61-63, 390 e.p.	5.25 – 5.50	5.25 – 5.50	5.375– 5.50
64-66, 375 e.p.	5.50 – 5.75	5.50 – 5.75	5.625– 5.875
U. S. Motor, (cases cargoes)	$1.60	$1.60	$1.60
64-66, cases (cargoes)	$1.70 –$1.72	$1.70 –$1.72	$1.70 –$1.72
KEROSINE			
44 water white	5.25	5.25	5.25 – 5.50
41-43 prime white	4.25	4.25	4.25 – 4.50
Water white, cases (cargoes)	$1.40	$1.40	$1.40
Prime white, cases (cargoes)	$1.30	$1.30	$1.30
GAS & BUNKER OILS			
*26-30 translucent gas oil	3.00	3.00	3.00 – 3.125
*30 plus translucent gas oil	3.00	3.00	3.00 – 3.125
Grade C bunker oil, for ships' bunkers, per bbl.	$0.90	$0.90	$0.90
Grade C bunker oil, per bbl. in cargoes	$0.62 –$0.65	$0.62 –$0.65	$0.65

*Less than ½ of 1% sulphur.
†Represents sales only.

MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid, per bbl.	$0.46	$0.46	$0.46 –$0.48
Grade C bunker oil for bunkering, taxes paid, per bbl.	$0.90	$0.90	$0.90
VENEZUELA CRUDE			
F. o. b. deepwater, Lake Maracaibo region	$0.72 –$0.76	$0.72 –$0.76	$0.76
SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F. cold test 0 Tanker, f. o. b. Gulf oil terminals.)			
100 vis. No. 2 unfiltered pale	4.75 – 5.75	4.75 – 5.75	4.75 – 5.75
200 vis. No. 3 unfiltered pale	6.75 – 8.25	6.75 – 8.25	6.75 – 8.25
300 vis. No. 3½ unfiltered pale	7.75 – 9.50	7.75 – 9.50	7.75 – 9.50
500 vis. No. 3½ unfiltered pale	8.75 –10.50	8.75 –10.50	8.75 –10.50
750 vis. No. 4 unfiltered pale	10.25 –12.75	10.25–12.75	10.25 –12.75
1200 vis. No. 4 unfiltered pale	14.00 –16.00	14.00 –16.00	14.00 –16.00
200 vis. No. 5-6 red oil	6.00 – 6.75	6.00 – 6.75	6.00 – 6.75
300 vis. No. 5-6 red oil	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75
500 vis. No. 5-6 red oil	8.00 – 9.00	8.00 – 9.00	8.00 – 9.00
750 vis. No. 5-6 red oil	9.25 –11.50	9.25 –11.50	9.25 –11.50
1200 vis. No. 5-6 red oil	13.00 –15.00	13.00 –15.00	13.00 –15.00

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

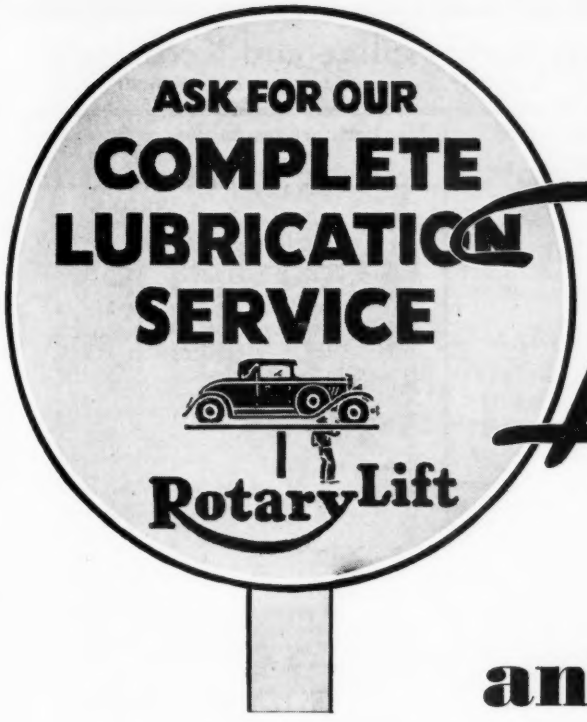
	April 6	March 30	March 23
Gasoline, U. S. Motor, 53-55 Gravity	4.00 – 4.50	4.25 – 4.75	4.25 – 5.00
Gasoline, U. S. Motor-blends and special cuts	4.50 – 5.00	4.75 – 5.25	4.50 – 5.25
Gasoline, 400 e.p. blend	5.25 – 5.50	5.50	4.75 – 5.50
Gas Oil, 30-34 per bbl.	$0.85 –$0.90	$0.85 –$0.90	$0.85 –$0.90
Diesel Oil, 27 plus, per bbl.	$0.85 –$0.90	$0.85 –$0.90	$0.75 –$0.85
Bunker oil, 14-18 per bbl.	$0.62 –$0.72	$0.62 –$0.72	$0.65 –$0.75
Fuel oil, 14-18 per bbl.	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
Kerosine, 38-40 w.w., 125-150 flash, per gal.	4.75 – 5.50	4.75 – 5.50	4.50 – 5.50
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Gasoline, 400 e.p. blend	$1.85 –$2.00	$1.85 –$2.00	$1.85 –$2.00
Kerosine, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	April 6	
	Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	21	18
Gulf to U. K. or Continental ports*	10-11	†10
North Atlantic to U. K. or Continental ports*	9/6	†8/6
Calif. to North Atlantic ports (not E. of N. Y.)	$0.45-$0.50	$0.45-$0.50
Gulf to North Atlantic ports (not E. of N. Y.)**	14-15	15

*Continental ports in the range between Bordeaux and Hamburg, both inclusive. **Venezuela loading same rate, for Tampico 2c to 3c per bbl. additional. †Two ports discharged.



Display this sign and get full benefit of this National Advertising

IT'S already started—a national campaign including good size space in the Saturday Evening Post—advertising in the direct interest of every Rotary Lift owner. Right through until November, the most profitable time of the year for you, it is at work directing motorists to Rotary Lift owners. Showing them how it pays to have their cars lubricated at stations which display the Red and White Rotary Lift Identification Sign.

Motorists in your town will see this advertising. They'll look for the Red and White Identification Sign that tells them *you're* the Rotary Lift man equipped to give them the best lubrication service in town.

Get the full benefit of this national advertising. The Red and White Rotary Lift Identification Sign will direct new customers to your station. If you haven't one already, write or wire for yours today.

THE ORIGINAL
ROTARY
LIFT
MEMPHIS, TENN.

Tank Wagon, Service Station Markets for Gasoline and Kerosine

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect April 6, 1931, as Posted by Principal Marketing Companies

Latest Changes in Tank Wagon Prices

Gasoline

S. O. New Jersey—T. w. and s. s. up 1c, thru North Carolina, to cover tax increase to 6c, **April 1.**

S. O. Kentucky—T. w. and s. s. cut 1c, Jackson, both to 14c, **March 25.**

S. s. only up 2c, Montgomery, to 19c, **March 16.**

S. s. only cut 2c, Savannah, to 18c, **March 13.**

S. O. Indiana—S. s. only cut 2c, Sioux City, to 13.1c, **March 27.** T. w. unchanged at 14.1c.

S. s. only cut 2c, Des Moines, to 13.5c, **March 31.** T. w. unchanged at 14.5c.

T. w. and s. s. gasoline up 2c, thru Wisconsin, covering tax increase to 4c, **April 1.**

T. w. and s. s. up 1c, thru Oklahoma, covering tax increase to 5c, **March 26.**

Q.D.A. change reported in March 25 issue, page 100, as effective April 1, indicated in footnote under S. O. Indiana territory in this table.

S. O. Louisiana—T. w. and s. s. cut 1c, New Orleans, to 16c and 17c respectively, including 6c state and city taxes, **April 1.**

T. w. and s. s. cut 1c, Memphis, to 15c and 16c respectively, including 5c tax, **April 1.**

Magnolia Petroleum—T. w. cut 2c, s. s. 3c, Fort Worth, to 13c and 15c respectively, including 4c tax, **March 28.**

Continental Oil—T. w. and s. s. up 1c, Denver, to 15c and 18c respectively, including 4c tax, **March 28.**

S. s. only up 1c, Pueblo, to 16c, **April 1.**

These dealer discounts advanced, **March 25**: Salt Lake City and Twin Falls, 4c off t. w. price; Boise, 2.5c.

S. O. California—T. w. and s. s. up 2c, thru Washington, covering tax increase to 5c, **April 1.**

Tank truck and wholesale prices cut 1c, Portland, to 11.5c and 17.5c, respectively, including 4c tax, **April 2.**

Canada—Gasoline prices published in the past two issues of NATIONAL PETROLEUM NEWS for Regina, Edmonton and Calgary, reflected a 1c cut on Feb. 11, not previously reported, and a 2c cut at Regina and Calgary, and 2.5c cut at Edmonton, **March 14.** Later reduction was announced in March 18 issue, page 116.

Aviation Gasoline

Continental Oil—T. w. price up 1c, Denver, to 18c, including 4c road tax, **March 28.**

Kerosine

S. O. New York—Kerosine up 1c, thru New York state, and Burlington, Vt., **March 26.**

S. O. Kentucky—Kerosine cut 1.5c, Augusta, to 14c t.w., **March 21.**

S. O. Louisiana—Kerosine cut 1c, Memphis, to 10c t. w., **April 1.**

Magnolia Petroleum—Kerosine cut 1c, thru Oklahoma, to 8c t. w., **March 27.**

Canada—Kerosine prices published for Edmonton and Calgary in past two issues of NATIONAL PETROLEUM NEWS reflected a 1c cut, Feb. 11, not previously reported, and a 2c cut March 14, as reported in March 18 issue, page 116.

S.O.NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	11.5	3	14.5	16.5	11.5
Newark, N. J.	10.5	3	13.5	15.5	10.5
Annapolis, Md.	12	4	16	17	11
Baltimore, Md.	11.2	4	15.2	16.2	9.5
Cumberland, Md.	13	4	17	18	12
Washington, D. C.	11.7	2	13.7	14.7	10.7
Danville, Va.	12.8	5	17.8	18.8	11.8
Norfolk, Va.	11.3	5	16.3	17.3	10
Richmond, Va.	11.7	5	16.7	17.7	10.7
Roanoke, Va.	13	5	18	17	12
Petersburg, Va.	12.3	5	17.3	18.3	11.3
Charleston, W. Va.	12.5	4	16.5	17.5	11.5
Keyser, W. Va.	13.1	4	17.1	18.1	12.1
Parkersburg, W. Va.	11.2	4	15.2	16.2	10.2
Wheeling, W. Va.	12.4	4	16.4	17.4	11.4
Raleigh, N. C.	13.2	6	19.2	20.2	12.2
Charlotte, N. C.	11	6	17	18	11
Mt. Airy, N. C.	13.6	6	19.5	20.5	12.5
Hickory, N. C.	13.6	6	19.6	20.6	12.6
Salisbury, N. C.	13.5	6	19.5	20.0	12.5
Charleston, S. C.	11.3	6	17.3	18.3	10.3
Columbia, S. C.	13.2	6	19.2	20.2	12.2

Note: 2c per gallon discount off retail t.w. price of gasoline to dealers thru S. O. New Jersey territory, except Maryland and Washington, D. C. where discount is 3c.

S. O. NEW YORK

Greater New York City: Boroughs of Manhattan, Bronx, Queens & Kings	11.3	2	13.3	15.3	10
Borough of Richmond	11.7	2	13.7	15.7	12
Albany, N. Y.	12.6	2	14.6	16.6	10.5
Buffalo, N. Y.	11.8	2	13.8	15.8	10
Rochester, N. Y.	12	2	14	16	10
Syracuse, N. Y.	12.8	2	14.8	16.8	10.5
Boston, Mass.	11.5	2	13.5	15.5	11
Augusta, Me.	12.8	4	16.8	18.8	12.8
Manchester, N. H.	12.4	4	16.4	18.1	11
Burlington, Vt.	13.3	4	17.3	19.3	11
New Haven, Conn.	12.6	2	14.6	16.6	12.6
Providence, R. I.	10.3	2	12.3	15.7	11

Discounts on gasoline: 2c per gal. off posted t. w price to dealers, thru territory, except 3c to dealers inNew York City, effective Feb. 20, 1931.

ATLANTIC REFINING

Pittsburgh, Pa.	12	*	12	17	12
Philadelphia, Pa.	12	*	12	17	12
Allentown, Pa.	12	*	12	17	12
Erie, Pa.	12	*	12	17	12
Scranton, Pa.	12	*	12	17	12
Altoona, Pa.	12	*	12	17	12
Dover, Del.	12	3	15	17	12
Wilmington, Del.	12	3	15	17	12
Boston, Mass.	11.5	2	13.5	15.5	10
Springfield, Mass.	12.5	2	14.5	16.5	10
Worcester, Mass.	12.3	2	14.3	16.3	10
Fall River, Mass.	12.1	2	14.1	15.1	10
Providence, R. I.	11.7	2	13.7	15.7	10
Hartford, Conn.	12.5	2	14.5	16.5	10
New Haven, Conn.	12.6	2	14.6	16.6	10
Atlantic City, N. J.	11.5	3	14.5	16.5	11.5
Camden, N. J.	10.6	3	13.6	15.6	10.6
Trenton, N. J.	11	3	14	16	11
Annapolis, Md.	12	4	16	17	11
Baltimore, Md.	11.2	4	15.2	16.2	9.5
Hagerstown, Md.	12.7	4	16.7	17.7	11.7
Richmond, Va.	11.7	5	16.7	17.7	10.7
Wilmington, N. C.	11.4	6	17.4	18.4	10.4
Brunswick, Ga.	12	6	18	20	**14
Jacksonville, Fla.	11	6	17	19	12

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics.

*3-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosine prices include 1c state tax.

S. O. KENTUCKY

Lexington, Ky.	12	5	17	18	12
Louisville, Ky.	11	5	16	17	11
Paducah, Ky.	12	5	17	18	11
Covington, Ky.	11	5	16	17	11
Jackson, Miss.	9	5	14	14	11.5
Vicksburg, Miss.	11	5	16	18	11.5
Birmingham, Ala.‡‡	13	4	17	19	13
Mobile, Ala.‡	13	4	17	19	13
Macon, Ga.	12	6	18	20	†13
Montgomery, Ala.*	13	4	17	19	13.5
Atlanta, Ga.	12	6	18	20	*†12.5
Augusta, Ga.	12	6	18	20	†14

Above prices include these inspection fees on both gasoline and kerosine, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosine; Arkansas, 1/20c on both; Florida, 1/8c on both; Illinois, 3/100c on both; Indiana, 2 25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 1/50c to 1/2c on both; Nebraska 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosine; Wisconsin, 1/25c on both.

Kerosine inspection fees only, per gallon: Iowa 7/100c; Michigan, 1/5c to 4/5c per gal.

Tank Wagon, Service Station Markets for Gasoline and Kerosine

These Prices in Effect April 6, 1931, as Posted by Principal Marketing Companies

S. O. KENTUCKY (*Continued*)

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Savannah, Ga.	12	6	18	18	†12
Jacksonville, Fla.	11	6	17	19	12
Miami, Fla.	12	6	18	20	13
Tampa, Fla.	11	6	17	19	12
Pensacola, Fla.**	12	6	18	20	13

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosine at Montgomery included.

†Georgia kerosine prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

‡Mobile gasoline prices include 1c city tax.

‡‡Birmingham gasoline prices include 1c city tax.

*†3c discount off t.w. price of oil at Atlanta, meeting competition.

S. O. OHIO

Ohio statewide	12	4	16	17	13
Defiance, Hancock, Marion and Wyandot counties	12	4	16	16	13

Note: Discount on gasoline to dealers and commercial consumers generally thru Ohio is 2c per gal. off above t.w. prices.

Discount on kerosine to dealers and commercial consumers is 3c per gal. off t.w. price thru Ohio.

S. O. INDIANA

Chicago, Ill.	11	3	14	15	9
Decatur, Ill.	11.4	3	14.4	15.4	9
E. St. Louis, Ill.	10.7	3	13.7	14.7	8.2
Joliet, Ill.	11.4	3	14.4	15.4	9
Peoria, Ill.	11.4	3	14.4	15.4	9
Quincy, Ill.	11.2	3	14.2	15.2	8.8
Springfield, Ill.	11.4	3	14.4	15.4	9
Indianapolis, Ind.	11.3	4	15.3	16.3	10.1
Evansville, Ind.	11.1	4	15.1	16.1	9.9
South Bend, Ind.	11.4	4	15.4	16.4	10.2
Detroit, Mich.	11.8	3	14.8	15.8	10.7
Grand Rapids, Mich.	11.7	3	14.7	15.7	10.6
Saginaw, Michigan	11.9	3	14.9	15.9	10.8
Green Bay, Wisc.	11.6	4	15.6	16.6	9.4
Madison, Wisc.	11.3	4	15.3	16.3	9.1
Milwaukee, Wisc.	11.1	4	15.1	16.1	8.9
La Cross, Wisc.	12.2	4	16.2	17.2	10
Minneapolis, Minn.	12.2	3	15.2	16.2	9.9
Duluth, Minn.	12.5	3	15.5	16.5	9.9
Mankato, Minn.	10.1	3	13.1	16	9.7
Des Moines, Ia.	11.5	3	14.5	13.5	9.3
Davenport, Ia.	11.5	3	14.5	15.5	9.3
Sioux City, Ia.	11.1	3	14.1	13.1	8.9
Mason City, Ia.	11.5	3	14.5	15.5	9.3
St. Louis, Mo.	*10.9	2	12.9	13.9	8.3
Kansas City, Mo.	†11.9	2	13.9	14.9	7.6
St. Joseph, Mo.	†11.5	2	13.5	14.5	8.1
Fargo, N. D.	13	3	16	16	11.9
Grand Forks, N. D.	14.2	3	17.2	18.2	12.2
Minot, N. D.	13.9	3	16.9	17.9	11.9
Pierre, S. D.	12	4	16	17	10.4
Huron, S. D.	12.3	4	16.3	17.3	10.7
Wichita, Kans.	9.8	3	12.8	13.8	7.8
Bartlesville, Okla.	9.5	5	14.5	17.5	7.5

Note: S. O. Indiana's quantity contract price schedule on gasoline (Q.D.A.), effective April 1, 1931, thru territory except Chicago, is; 2c per gal. off t.w. price for 1,000 gals. or more per month; in Chicago, 3c per gal. off t.w. price for 1,000 gals. or more per month.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. NEBRASKA

Omaha, Neb.	11.25	4	15.25	17.25	9.25
McCook	12.75	4	16.75	18.75	10.75
Norfolk	11.75	4	15.75	17.25	9.75
North Platte	12.75	4	16.75	18.75	10.5
Scottsbluff	12	4	16	16	10.25

Note: Discounts: 1c per gal. off tank wagon price of gasoline for 1,000 gallon dumps per month to consumers taking tank wagon delivery only discount applying only at normal points.

S. O. LOUISIANA

	Posted Retail T.W.	Tax	Total Posted Retail T.W.	Posted Retail S.S.	T.W.
Little Rock, Ark.	11	6	17	18	11
Alexandria, La.	11	*6	17	18	†12
Baton Rouge, La.	11	5	16	17	†12
New Orleans, La.	10	*6	16	17	†12
Lake Charles, La.	11	*6	17	18	†12
Shreveport, La.	11	5	16	17	†12
Lafayette, La.	11	*6	17	18	†12
Bristol, Tenn.	14	5	19	20	14
Chattanooga, Tenn.	13	5	18	19	13
Knoxville, Tenn.	13.5	5	18.5	19.5	13.5
Nashville, Tenn.	12.5	5	17.5	18.5	12.5
Memphis, Tenn.	10	5	15	16	10

Note: Discounts in S. O. La. territory: To dealers and commercial consumers from the tankwagon, 2c per gal. off posted retail t.w. price.

*Lake Charles, Alexandria, New Orleans and Lafayette gasoline tax includes 5c state tax and 1c parish tax. New Orleans kerosine price includes 1c parish tax in addition to 1c state tax.

†Kerosine price in Louisiana includes 1c state tax.

MAGNOLIA PETROLEUM

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Muskogee, Okla.	8	4	12	15	8
Oklahoma City	6	4	10	12	8
Tulsa, Okla.	6	4	12	15	8
Fort Smith, Ark.†	11	4	15	16	11
Little Rock, Ark.	11	6	17	18	11
Texarkana, Ark.*	12	4	16	16	11
Dallas, Tex.	11	4	15	18	11
Fort Worth, Tex.	9	4	13	15	10
Houston, Tex.	10	4	14	18	11
San Antonio, Tex.	10	4	14	18	10
El Paso, Tex.	10	4	14	18	12

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.

CONTINENTAL OIL

			Gasoline		Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Denver, Colo.	11	4	15	18	12.5
Pueblo, Colo.	9	4	13	16	12
Grand Junc., Colo.	14	4	18	19	16
Casper, Wyo.	11	4	15	18	10
Cheyenne, Wyo.	12	4	16	19	11.5
Butte, Mont.	14	5	19	22	16
Helena, Mont.	15	5	20	23	16
Salt Lake City, Utah.	†14.5	3.5	18	17	16
Boise, Ida.	*16.5	5	21.5	..	18
Twin Falls, Ida.	†16.5	5	21.5	..	18
Albuquerque, N. M.	11	5	16	20	14

*Less 2.5c on gasoline at time of delivery.

†Less 4c on gasoline at time of delivery at Salt Lake and Twin Falls.

S. O. CALIFORNIA

	State Tax	Gasoline Tank Truck	Wholesale	*Retail	Oil T.W.
San Francisco, Cal.	3	9	15	12	15.5
Los Angeles, Cal.	3	7.5	13.5	10.5	15.5
Fresno, Cal.	3	9	15	....	17
Phoenix, Ariz.	5	17.5	18.5	21	20
Reno, Nev.	4	16	22	....	19
Portland, Ore.	4	11.5	17.5	14.5	16.5
Seattle, Wash.	5	11	17	14	16.5
Spokane, Wash.	5	18	22	....	20.5
Tacoma, Wash.	5	11	17	....	16.5

Note: No discounts off above gasoline prices; tank truck prices are those to resale trade.

***Retail prices are those of Standard Stations, Inc., marketing subsidiary of the Standard Oil Co. of California.**

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	T.W.	Tax	Gasoline Total T.W	S.S	Oil T.W.
Toronto	16	5	21	24.5	17
Ottawa	17	5	22	25.5	18
North Bay	20	5	25	30.5	21
Fort William	19.5	5	24.5	28	19.5
Border Cities, including Windsor	16	5	21	24.5	15

MANITOBA

Winnipeg	18	5	23	27	18.5

SASKATCHEWAN

Regina	22	5	27	31	22

ALBERTA

Edmonton	23	5	28	31.5	23
Calgary	19.5	5	24.5	28	19.5

BRITISH COLUMBIA

Vancouver	21	5	26	28	22

QUEBEC

Montreal	17	5	22	25.5	18
Quebec City	19	5	24	27.5	20
Three Rivers	19	5	24	27.5	20

NEW BRUNSWICK

St. John	18.5	5	23.5	27.5	20.5
Moncton	18.5	5	23.5	27.5	20.5

NOVA SCOTIA

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Halifax	18.5	5	23.5	27.5	20.5

PRINCE EDWARD ISLAND

Charlottetown	18.5	5	23.5	27.5	20.5

Note: In districts surrounding these points 1c additional is added to city price.

NAPHTHA PRICES

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	10.7	12.7	14.2
Detroit	13.4	14.9	15.7
Kansas City	†11.9	†13.4	†14.2
Milwaukee	12.4	*15.9	*16.7
Minneapolis	**16.7	**18.2	**19
St. Louis	11.6	13.1	13.9
New York		14	20
Boston		17	20

*Includes 2c state tax. †Includes 1c city tax.

**Includes 3c state tax.

Petroleum Spirits (Solvent)

Tank Cars (F.o.b. refinery or seaboard terminal)	
New York harbor	10.00
Philadelphia district	10.00
Providence	10.50
Tank Wagon or Steel Barrels	
New York City	14
Syracuse	17
Rochester	18
Buffalo	16
Providence	17
Boston	17
Bridgeport	15
Newark	16
Philadelphia	14
Lancaster	17
Altoona	17
Baltimore	17

Note: 2c off above t.w. prices to large buyers in some instances.

Aviation Gasoline Prices

Following are tank wagon prices of aviation gasoline in principal marketing territories showing state and municipal taxes:

S. O. NEW JERSEY

Prices in Effect April 6, 1931

	T.W.	Tax	Total T.W.
Newark, N. J.	16.9	*	16.9
Baltimore, Md.	16.2	4	20.2
Washington, D. C.	17	2	19

*New Jersey road tax of 3c does not apply on aviation gasoline, exemption being claimed at time of purchase.

All above prices are on Stanavo Aviation Gasoline.

COLONIAL BEACON OIL CO.

New York City	17.5	2	19.5
Boston	17	2	19

S. O. PENNSYLVANIA

Philadelphia, Pa.	16	3	19
Pittsburgh, Pa.	16	3	19
Altoona, Pa.	16	3	19

S. O. OHIO

Thru Ohio	15	4	19

Discounts given by S. O. Ohio: For airport delivery only; 2,000 gals. or over per month, 1c per gal.; 6,000 gals. or over per month, 2c; 12,000 gals. and over per month, 3c; 24,000 gals. and over per month, 4c.

S. O. INDIANA

Chicago	14	3	17
Indianapolis, Ind.	14.3	4	18.3
Detroit, Mich.	14.8	3	17.8
Milwaukee, Wis.	14.1	2	16.1
Minneapolis, Minn.	15.2	3	18.2
St. Louis, Mo.	13.4	2	15.4
Kansas City, Mo.	13.9	2	15.9
Fargo, N. D.	16.9	3	19.9
Huron, S. D.	15.3	4	19.3
Wichita, Kan.	12.8	3	15.8

In S. O. Indiana territory, buyer pays state and city taxes on aviation gasoline, and if he can get a refund from the state, he does so. Kansas City tax of 3c includes 1c city tax.

(*Continued on Page 124*)

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NEW YORK PHILADELPHIA CLEVELAND CHICAGO ST. PAUL
ST. LOUIS KANSAS CITY FT. WORTH TORONTO

Crude Oil Prices (in Effect April 6, 1931)

Crude prices for the whole year in OIL PRICE HANDBOOK published annually

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Bradford—Alleghany district (posted by Tide Water Pipe Co., Ltd.) (Effective Nov.12,1930) $2.15
Penna. Grade Oil in National Transit Lines (Effective Nov. 12, 1930) *1.85
Penna. Grade Oil in Southwest Penna. Pipe Lines (Effective Nov. 12, 1930) 1.80
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) (Effective Nov. 12, 1930) 1.70
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) (Effective Nov. 12, 1930) 1.45
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective March 11, 1931) 0.80
Somerset oil in main system of Cumberland Pipe Line (posted by Ashland Refining Co.) (Effective March 6, 1931) $0.75
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 9, 1929) $0.60
*Oil run prior to July 1, 1929 is 5c less per bbl.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective April 1, 1931) $0.60

MICHIGAN

(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon), effective March 5, 1931, same gravity and price schedule as Stanolind posts in Oklahoma, Kansas and North Texas, which see below.

(Posted by Pure Oil Co.)

Midland, Midland County (March 13, 1931) $0.75

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective March 6, 1931

Wooster	$0.99	Princeton	$0.80
Lima	0.90	Illinois	0.80
Waterloo	1.20	West Kentucky	0.75
Indiana	0.50		

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Effective Oct. 28, 1930

Petrolia $1.50
Oil Springs 1.57

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of *Stanolind Crude Oil Purchasing Co. (In Oklahoma, Kansas, North and North Central Texas)

Effective March 5, 1931

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

*Prairie Oil & Gas withdrew postings in Oklahoma, Kansas and Texas, Jan. 1, 1931.

On March 5, 1931 these crude purchasers met above prices: Continental Oil Co., Eason Oil Co., Mid-Continent Petroleum Corp., Standard Oil Co. of Kansas, Tidal Refining Co., White Eagle Oil & Refining Co.

On March 10, 1931, these met Stanolind: Humble and The Texas Co.

Humble Oil & Refining Co.

Effective March 10, 1931

In North Texas, Ranger, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona fields, all in Texas, same prices as Stanolind, which see.

Magnolia Petroleum Co.
(In Oklahoma, Kansas, North, *East and East Central Texas)

*Effective March 5, 1931

Magnolia posts same prices in all three states as Stanolind, except these lower grades:

Below 26	$0.40	27-27.9	$0.42
26-26.9	0.41	28-28.9	0.43

*Effective March 26, 1931, in East Texas.

Carter Oil Co.
(Oklahoma and Kansas)

March 10, 1931, same prices as Stanolind, which see.

PANHANDLE TEXAS

Humble Oil & Refining Co.

Effective March 10, 1931

Hutchinson and Carson Counties:

Below 35	$0.38	38-38.9	0.46
35-35.9	0.40	39-39.9	0.48
36-36.9	0.42	40 and above	0.50
37-37.9	0.44		

Gray County:

Below 35	$0.43	38-38.9	$0.51
35-35.9	0.45	39-39.9	0.53
36-36.9	0.47	40 and above	0.55
37-37.9	0.49		

Above prices met by Magnolia and The Texas Co. on March 10 in Hutchinson, Carson and Gray counties.

Wheeler County: Posted by Magnolia Pet. Co. Effective Apr. 10, 1930. Humble withdrew Wheeler county postings Apr. 10, 1930.

Below 30	$0.755	37-37.9	$1.11
30-30.9	0.805	38-38.9	1.145
31-31.9	0.855	39-39.9	1.18
32-32.9	0.905	40-40.9	1.215
33-33.9	0.955	41-41.9	1.25
34-34.9	1.005	42-42.9	1.285
35-35.9	1.04	43-43.9	1.32
36-36.9	1.075	44 and above	1.355

WEST TEXAS and NEW MEXICO

Humble Oil & Refining Co.

Effective March 10, 1931

Pecos and Winkler, (West Texas) and Lea County, N. M., all grades $0.40
Crane, Upton, Crockett, Ector, Howard and Glasscock Counties, all grades $0.35

March 10, 1931, The Texas Co. same prices in Crane, Upton, Winkler and Lea counties as Humble. Oct. 28, Magnolia same prices in Winkler, Crane, Upton, Howard, Glasscock and Mitchell counties.

SOUTH and SOUTHWEST TEXAS

(Posted by Humble Oil & Refining Co.)

All Effective March 10, 1931

Mirando (Jan. 15, 1931) $0.69
Salt Flat 0.60
Darst Creek 0.60
Pettus, Bee County 0.95

(Posted by Magnolia Petroleum Co.)

Corsicana Heavy $0.45
Luling 0.45

(Posted by The Texas Co.)

Markham $0.50

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine, Cotton Valley, Sarepta and Carterville.

Effective March 10, 1931

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

Smackover, all grades $0.45
Bellevue 0.45
*Urania, La. (Oct. 30, 1930) 0.75
†East El Dorado (Calion) 0.45

*Posted by Louisiana Oil Refining Corp.
†Posted by Magnolia Petroleum Co.

March 10, 1931, The Texas Co. same schedule in Louisiana as Standard.

March 10, Magnolia met Standard schedule in Louisiana-Arkansas fields except it posts the same low grades in La.-Ark. as in Mid-Continent.

Stephens, Arkansas
Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective March 10, 1931

Below 29 $0.38 29 and above $0.41

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective Jan. 14, 1931

Grades A	$0.80	32-32.9	$0.85
Grades B:		33-33.9	0.87
Below 25	0.69	34-34.9	0.89
25-25.9	0.71	35-35.9	0.91
26-26.9	0.73	36-36.9	0.93
27-27.9	0.75	37-37.9	0.95
28-28.9	0.77	38-38.9	0.97
29-29.9	0.79	39-39.9	0.99
30-30.9	0.81	40 and above	1.01
31-31.9	0.83		

On Oct. 28, The Texas Co. posted same prices on Grades A and B Gulf Coast crude as Humble.

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Humble, Pierce Junction, Sugarland, Refugio county, and Raccoon Bend. All other fields are Grades A only.

Specifications for Grade "A" crude: Gravity: 25° and below, at 60° F. Viscosity: not less than 100 seconds at 100° F. Saybolt.
Sulfur: not over .4%.

Grade "B" includes all Coastal crude which does not meet the test for "A" grades.

Crude Price Changes

LOUISVILLE.—On April 1 Stoll Oil Refining Co. reduced Oil City, Ky., crude 10 cents, making new price 60 cents per barrel. Last previous change was a 10-cent cut March 7.

SAN FRANCISCO.—On March 31 Standard Oil Co. of California met the reductions on high gravity California crude posted March 30 by the Union Oil Co. The Standard's reduction ranged from 1 to 35 cents. Lower grade oils were unchanged.

This is the third cut on California crude in March. The other two were: 1 to 45 cents, March 20; and 5 to 80 cents, March 10.

Nearly 1,400,000 pounds of paraffin and ceresine were exported by this country to Switzerland during the first nine months of 1930. This constituted more than half of Switzerland's paraffin imports.

Out of total imports of 473,000 pounds of petrolatum by Switzerland in the first nine months of 1930, the United States shipped 343,500 pounds.

The United States was the second lowest shipper of crude oil to the United Kingdom during 1929. It is shipped but 160,000 barrels, compared with Persia, the principal source, which furnished 9,552,000 barrels. Colombia furnished 1,460,330 barrels and Curacao 1,221,255 barrels.

Gasoline imports by the United Kingdom in 1929 totaled 24,110,000 barrels. Of this amount the United States furnished 13,652,000 barrels and 12 other countries the rest.

The United States and Russia were the largest kerosine suppliers to the United Kingdom in 1929. The former shipped 2,880,000 barrels and the latter 2,410,280 barrels, out of a total of 7,467,000 barrels.

Lubricating oil imports by the United Kingdom totaled 2,898,000 barrels during 1929, of which 2,243,000 barrels were furnished by the United States.

When an outside viewpoint may be "Inside information"

With new developments in selling, new methods to replace old ones, doesn't your package merit equal attention? And here is where an *outside* and expert viewpoint can be of valuable assistance. Have Canco designers study your present motor oil package, gauge its effectiveness to your market and product. These experts studying and consulting with you on your packaging problems, considering it as a fresh and vital subject, are sure to render you valuable and timely suggestions.

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AMERICAN CAN COMPANY

Chicago
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New York
New York Central Building

San Francisco
111 Sutter Street

Crude Oil Prices (in Effect April 6, 1931)

(Prices are per barrel at the well)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

ROCKY MOUNTAIN FIELDS
(Posted by Midwest Refining Co.)
(Salt Creek prices effective March 5, 1931)

Salt Creek, below 29°		$0.43
" " "	29-29.9	0.45
" " "	30-30.9	0.47
" " "	31-31.9	0.49
" " "	32-32.9	0.51
" " "	33-33.9	0.53
" " "	34-34.9	0.55
Salt Creek	35-35.9	0.57
" "	36-36.9	0.59
" "	37 and above	0.61

(Posted by Ohio Oil Co. and Midwest Refining Co.)

Elk Basin	$0.90
Grass Creek light	0.90
Big Muddy	0.65
Lance Creek	0.98
Rock Creek	0.66
Mule Creek	1.20
Rex Lake	1.10
Pondera	1.45
†Osage	0.50
†Cat Creek, Mont.	0.90
Sunburst, Mont.	1.55
†Hogback, N. Mex. (April 1, 1931)	0.90

†Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin. Others are prices of Ohio Oil Co.

CALIFORNIA CRUDE
†Standard Oil Co. of California
Effective March 31, 1931

Gravity	Signal Hill, Seal Beach, Alamitos Heights, Huntington Beach, Inglewood, Olinda-Brea Canon, Athens-Rosecrans-Dominguez, Torrance, Richfield, Whittier, LaHabra, Montebello, Coyote Hills and Santa Fe Springs	Elwood Terrace	Newhall, McKittrick, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills, Coalinga and Wheeler Ridge	*Santa Paula	*Orcutt
14-19.9	$0.65	F.O.B. Ship	$0.55	$0.60	$0.55
20-20.9	.65		.53	.58	.53
21-21.9	.62		.51	.56	.51
22-22.9	.59		.49	.53	.49
23-23.9	.56		.47	.50	.47
24-24.9	.53		.45	.47	.45
25-25.9	.50		.43	.44	.43
26-26.9	.47		.41	.41	.41
27-27.9	.44		.39	.38	.39
28-28.9	.41		.37	.35	.37
29-29.9	.38		.35	...	.35
30-30.9	.35		...	...	...
31-31.9	.35		...	...	...
32-32.9	.35		...	...	...
33-33.9	.35		...	...	...
34 and above	.35	$0.35	...	...	...

*Posted by Union Oil Co. of California, effective March 30, 1931.

†Postings on Kettleman Hills crude discontinued by Standard, March 10, 1931; on Playa del Rey, March 31,1931.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	April 6	March 30
Soda Ash Light 58% bags,cwt.	$1.20-1.38	$1.20-1.38
Silicate of Soda 60 deg. drums, ...cwt.	$1.75-1.90	$1.75-1.90
Silicate of Soda 40 deg. tank cars....cwt.	$0.70	$0.70
Silicate of Soda 40 deg. drums, ...cwt.	$1.00	$1.00
Sal Soda wks....	$0.90-1.20	$0.90-1.20
Caustic Soda 76% solid..cwt.	$2.25-2.50	$2.25-2.50
Sulfuric Acid 60 deg. tank cars, f. o. b. shipping point per ton....	$11.00-12.50	$11.00-12.50
Sulfur, flowers of.....cwt.	$3.10-4.00	$3.10-4.00
Liquid Chlorine, tank cars, wks....lb.	1.75	1.75

Compounders' Supplies

Vegetable Oils

Linseed carloads, spot.....lb.	9.20	9.40
Tanks, spot....	8.60	8.80
Soya Bean, Tank, coast...lb.	7.10	7.10

Oleic Acid

Distilled, tanks....lb.	7.50	7.50
Distilled, bbls....lb.	8.375	8.375
Saponified, tanks....lb.	7.75	7.75
Saponified, bbls....lb.	8.625	8.625

Lard Oils

Prime Winter Strained....lb.	13.00	12.75
Extra Winter Strained....lb.	9.75	9.50
Extra....lb.	9.50	9.25
Extra No. 1....lb.	9.00	8.75
No. 1....lb.	8.75	8.50
No. 2....lb.	8.50	8.25
Tallow oil....lb.	8.25	8.00

Neatsfoot Oil

Pure, bbls....lb.	11.25	11.00
Extra, bbls....lb.	9.25	9.00
No. 1 bbls....lb.	9.00	8.75
Cold Pressed....lb.	16.00	15.50

Fish Oils

Menhaden Oil Light Pressed....gal.	38–40	38–40
Light Pressed, tank cars, N. Y....gal.	30–32	30–32
Yellow bleached....gal.	42	42
Whale, extra winter bleached, ...gal.	80	80

Naval Stores

Steam, distilled turpentine, N. Y....gal.	50	51
Steam, distilled turpentine, Savannah....gal.	48	49
Gum turpentine, N. Y....gal.	54-56	54-56
Gum turpentine, f. o. b. cars Savannah....gal.	48-50	48-50
Wood Rosin, N. Y....bbl.	$5.30	$5.30
Wood Rosin F, Savn'h....bbl.	$5.20	$5.20
Gum Rosin B, N. Y....bbl.	$4.80	$4.80
Gum Rosin B, f. o. b. cars Savannah....bbl.	$4.05	$4.05
Rosin oil, pure....gal.	54	54
Rosin, oil, compounded...gal.	48	48

Pine Tar

Kiln burnt....bbl.	$10.00-11.00	$13.00-14.00
Retort....bbl.	$11.50-12.50	$13.50-14.50

Alcohol

Denatured Formula 5, in tanks, per gal....	24	22–24

Crude Price Changes

CASPER.—On April 1 Midwest Refining Co. reduced price of Hogback, N. M., crude 25 cents, making new price 90 cents per barrel. Last previous change was a cut of 35 cents on March 7.

Low Foreign Gasoline Prices

LONDON—The lowest gasoline price for 35 years in the United Kingdom are those in effect now, following a four cent reduction in March, according to reports from London.

Prices of 29 cents and 25 cents, including 8 cent tax, are in effect on motor grade of gasoline.

Other points where gasoline prices have been generally cut include Austria, where retail prices were cut to 20 cents per gallon in Vienna, a decrease of 5 per cent.

In Germany, gasoline prices have been materially reduced following the competition between Russia and other companies. British suppliers are accused, among others, of offering rebates to commercial consumers.

Taxed Gasoline Demand Gains 11.5 Per Cent in January

NEW YORK, March 31

THE largest increase in several months in taxed gasoline consumption, as reported by wholesalers and dealers in the various states under gasoline tax laws, was indicated in January when demand in 46 states and the District of Columbia gained 85,223,000 gallons or 11.5 per cent over January, 1930. Consumption in January was 824,810,000 gallons, compared with 739,587,000 gallons in January a year ago, according to the American Petroleum Institute.

Daily average consumption in January was 26,607,000 gallons, compared with a daily average of 28,858,000 gallons in December, 1930, a decrease in daily average of 7.8 per cent.

Among the 46 states reporting gasoline sales in January, only seven states indicated decreases in consumption over January a year ago. These decreases were all under 6.5 per cent.

Consumption figures by states are shown in the accompanying table for January, compared with January, 1930, and December, 1930.

Buy Refinery Site

LONGVIEW, Tex., April 4.—The S. S. Kouri interests, of Wichita Falls, have bought a refinery site at Gladewater, west of Longview. The plant will be started with capacity of 1000 barrels daily and will be in operation by May 15, it is planned.

Gasoline Consumption by States, January 1931

(Figures in Thousands of Gallons)

	Dec., 1930 Gallons	Jan., 1931 Gallons	Jan., 1930 Gallons	% Change 1931 from 1930
Alabama	13,390	12,575	13,221	— 4.89
Arizona	6,497	5,850	5,935	— 1.43
Arkansas	10,686	11,752	10,921	+ 7.61
Colorado	10,488	12,037	9,963	+20.82
Connecticut	17,061	13,641	12,816	+ 6.44
Delaware	2,816	2,258	2,406	— 6.15
District of Columbia	6,443	6,489	5,452	+19.02
Florida	21,213	22,221	22,012	+ 0.95
Georgia	18,234	17,093	17,433	— 1.95
Idaho	3,578	2,943	2,577	+14.20
Illinois	72,692	65,609	57,714	+13.68
Indiana	31,880	31,976	29,603	+ 8.02
Iowa	33,600	27,814	24,381	+14.08
Kansas	26,153	26,815	21,722	+23.45
Kentucky	12,893	12,396	10,048	+23.37
Louisiana	14,527	13,847	14,124	— 1.96
Maine	6,985	4,441	3,523	+26.06
Maryland	14,057	12,337	10,809	+14.14
Massachusetts	41,998	33,001	30,315	+ 8.86
Michigan	57,316	52,644	47,036	+11.92
Minnesota	25,584	28,269	22,131	+27.73
Mississippi	9,491	(a)10,060	10,596	— 5.06
Missouri	35,750	34,011	27,734	+22.63
Montana	4,707	4,159	3,054	+36.18
Nebraska	16,370	17,695	15,545	+13.83
Nevada	1,335	1,070	929	+15.18
New Hampshire	4,010	2,959	2,627	+12.64
New Jersey	40,942	36,813	32,638	+12.79
New Mexico	4,414	3,594	3,407	+ 5.49
North Carolina	22,053	20,045	21,240	— 5.63
North Dakota	4,096	6,298	3,047	+106.70
Ohio	70,193	63,371	62,115	+ 2.02
Oklahoma	23,050	23,448	20,154	+16.34
Oregon	11,913	10,290	7,077	+45.40
Rhode Island	6,870	5,988	5,081	+17.85
South Carolina	9,785	8,987	8,803	+ 2.09
South Dakota	8,129	8,906	7,662	+16.24
Tennessee	16,936	15,036	14,047	+ 70.4
Texas	70,232	61,059	54,225	+12.60
Utah	3,792	3,750	3,706	+ 1.19
Vermont	2,966	2,124	1,793	+18.46
Virginia	18,056	15,658	14,374	+ 8.93
Washington	19,963	16,431	15,336	+14.61
West Virginia	9,953	8,028	7,125	+12.67
Wisconsin	29,046	26,879	22,444	+19.76
Wyoming	2,443	2,143	1,686	+27.11
Total	894,586	824,810	739,587	+11.52
Daily Average	28,858	26,607	23,858	+11.52
Increase over previous year:				
Amount of Increase	.....	85,223	.....	.....
Percentage increase in Daily Average	.....	11.50%	.....	.....

(a)—Estimated.

Prairie Deliveries

TULSA—Deliveries of the Prairie Pipe Line Co. of crude oil to refiners totalled 2,095,788 barrels in March, a daily average of 67,606 barrels. The average in February was 76,702 barrels.

Re-Design Fuel Systems Says Committee D-2

PITTSBURGH, March 29.—Problems common to the automotive and petroleum industries were discussed at meetings of Committee D-2 held in conjunction with the group meeting of A. S. T. M. committees here March 16 and 17.

Because the design of fuel system on automobiles is quite as important as fuel specifications, automotive interests voiced the need for improvement in such design. Trifling expenditures in the initial cost of the motor will eliminate the majority of vapor lock troubles and permit even better starting qualities in fuel.

Progress was also reported in fuel oil specification work, in methods of test for color, distillation, gravity and for the evaluation of lubricating grease.

Hope Engineering Forms New Company

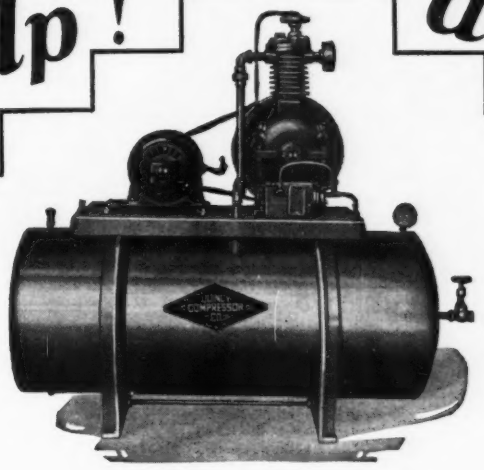
MT. VERNON, O., March 30.—The engineering and construction departments of The Hope Engineering Co. here have been segregated into a separate affiliated company, known as Hope Engineers & Contractors, Inc. This has been done because of the extensive activities of the Hope company in all branches of the oil and gas industry, according to Robert J. Lindsay, vice president of the Hope Engineering Co.

The new company makes it possible to widen the scope of work on construction activity in the oil and gas industry, Mr. Lindsay says.

Officers of the new company are:

R. S. Lord, president; R. B. Lloyd, W. B. Jennings and D. W. Patterson, vice presidents; W. P. Lord, treasurer; and T. B. Hall, secretary.

Efficiency Up! Air Costs down!



Model F-2

This unit will take care of all Service Station requirements,—operating car lifts, greasing, tire inflation, etc. Automatic; single stage, air cooled. Vee Belt driven. Size of compressor, 3 x 3½. Displacement 6 to 8.6 with motors from 1 to 1½ H.P. 150 lbs. cut out pressure. Complete with 25 ft. hose, chuck, compressor muffler, outlet valve and all fittings.

WHEN a highly efficient Quincy Compressor goes to work in a Service Station, efficiency immediately steps upward and air costs take a tumble.

The economy of Quincy Compressors lies in their ability to supply dependable service for a long, long time at the lowest possible cost for power and maintenance. And this ability is the direct result of the most modern compressor design coupled with workmanship and inspection of the highest order.

Look into Quincys before you buy. The coupon at the right will bring all details.

Quincy Compressor Co.,
223 Maine St., Quincy, Ill.

Please send complete information about Quincy Compressors suitable for Service Stations and Garages.

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Also in other important centers

Above is a "bare" Model A, the heart of many Quincy water cooled models. Made in three sizes, 1¾ x 1½, 2½ x 2½, 3 x 3½. 150 lbs. intermittent pressure.

P-1

Transactions in Oil Shares on New York Stock Exchange

1929 High	1929 Low	1930 High	1930 Low	Listed Shares	Par Value	Company	Div. Rate	Last Paid	Transactions Week Ended April 4 Sales	First	High	Low	Last	Change§
42⅝	17½	42¼	16½	922,075	N.P.	Amerada Corp.	50cQ	Jan. 30, 31	2,000	19	20	19	19½	0
64¾	12½	37	5⅜	209,180	N.P.	American Republics Corp.	....	.....	300	8⅛	9	8⅛	8¼	— ¼
47¼	34½	51	30	2,240,000	$25	Associated Oil.	50cQ	Mar. 31, 31	120	....	31	30	30	— 1
77⅞	30	51¾	16⅝	2,683,868	25	Atlantic Refining Co.	25cQ	Mar. 16, 31	19,800	18¾	18¾	17¼	17⅞	— ⅞
49⅛	20	34	8⅝	2,257,108	25	Barnsdall Corp. A.	25cQ	Feb. 16, 31	16,900	11¼	11¼	10¼	11	— ½
34½	25	35	21	2,060,966	25	California Petroleum Corp.	....	Jan. 1, 29	....	....	....	....	....	.....
32⅞	12½	20⅝	8¾	1,444,970	N.P.	Colonial Beacon Oil Co.	....	.....	1,000	9	9	9	9	0
37¾	18	30½	7¾	4,610,258	N.P.	Continental Oil (Delaware)	....	.....	20,827	9⅛	9¼	8¾	9	— ⅛
94¾	42¼	71⅛	22⅜	410,857	$100	General Asphalt Co.	75cQ	Mar. 16, 31	56,000	41¼	42¼	28¾	29¾	—12¼
109	26	116⅜	29¼	250,000	100	Houston Oil.	....	.....	30,400	54½	54½	48⅝	51	— 3⅛
..	..	10¼	6⅜	.....	..	Houston Oil, new.	....	.....	20,000	11⅝	12¼	10⅞	11½	— ⅜
53	13⅛	28⅝	3	699,066	10	Indian Refining.	....	Dec. 15, 20	1,000	3½	3⅜	3⅜	3⅜	— ¼
51¼	11½	27¾	3½	568,816	10	do certificates.	....	.....	....	....	....	....	....	.....
38⅝	16½	29½	21¼	3,994,150	N.P.	Lago Oil & Transport.	....	Aug. 2, 27	....	....	....	....	....	.....
18	7	12	3½	1,187,701	N.P.	Louisiana Oil Refining.	....	.....	1,300	4	4	4	4	0
100¼	80	89½	60	40,000	$100	do pfd.	$1.62½Q	Feb. 14, 31	....	....	....	....	....	.....
18½	5⅞	10⅜	1¾	330,000	N.P.	Maracaibo Oil Exploration.	....	.....	900	2¼	2¼	2	2	— ½
295	176	182	150	459,428	$100	Mexican Petroleum.	$3Q	Jan. 20, 31	....	....	....	....	....	.....
105	102	100	100	120,000	100	do pfd.	$2Q	Jan. 20, 31	....	....	....	....	....	.....
69⅜	9¼	37	9¾	1,244,383	N.P.	Mexican Seaboard Oil.	....	Oct. 15, 24	35,500	16⅝	17¼	15⅜	16½	— ⅛
39⅞	22⅜	33	11	1,899,138	N.P.	Mid-Continent Petroleum.	50cQ	Feb. 16, 31	15,800	12¼	12⅜	10½	10⅜	— 1⅝
3⅜	¾	2½	¾	908,171	N.P.	Middle States Oil ctfs.	....	.....	....	....	....	....	....	.....
..	..	32	16	6,708,086	N.P.	Ohio Oil Co.	25cQ	Mar. 14, 31	17,575	13⅝	14	12½	13	— ⅝
69	40¼	64¼	42	1,000,000	$50	Pan American Petrol. & Trans.	....	Oct. 20, 27	200	32	32	32	32	— 2
69¼	40½	67½	32	2,422,221	50	do B.	....	Oct. 20, 27	200	32	32	32	32	— 1
15¼	3	12¾	1¾	199,370	N.P.	Panhandle Prod. & Refg.	....	.....	2,000	2⅝	2⅞	2⅜	2¾	+ ¼
76	47½	80	47½	25,666	$100	do pfd.	....	July 2, 23	100	16	16	16	16	+ ⅜
..	..	27½	6	2,937,900	N.P.	Petroleum Corp. of America.	37½cQ	Dec. 31, 30	10,500	8¼	8¼	7¾	7¾	— ½
47	24¼	44¾	12	2,670,089	N.P.	Phillips Petroleum Co.	50cQ	Jan. 2, 31	47,500	11	11⅛	9	9⅞	— 1¼
3⅝	1	2½	⅛	1,184,917	$25	Pierce Oil Corp.	....	.....	2,900	⅞	⅞	⅞	⅞	0
51½	20	52	7½	150,000	100	do pfd.	....	Feb. 1, 22	300	13	13	12	12¼	— 1
5⅞	⅛	7⅛	1⅝	2,500,000	N.P.	Pierce Petroleum Corp.	10c	Feb. 16, 31	2,800	2½	2½	2⅛	2½	0
65⅝	40½	54	11¼	2,435,670	$25	Prairie Oil & Gas Co.	50cQ	Mar. 31, 31	7,400	14⅜	14⅜	12½	12⅝	— 1⅞
65	45	60	16⅜	4,050,000	25	Prairie Pipe Line Co.	75cQ	Mar. 31, 31	6,500	21⅛	21⅛	20	20⅛	— ⅞
25⅞	4	31	1	749,017	50	Producers & Refiners Corp.	....	Sept. 15, 23	700	3¾	4⅛	3¾	4	+ ½
46¾	25¼	38	11½	56,907	50	do pfd.	....	May 4, 25	30	14¾	14¾	14¾	14¾	0
30¾	20	27¼	7⅝	3,038,370	25	Pure Oil Co.	....	Sept. 1, 30	2,700	8⅞	8⅞	8½	8⅝	— ⅜
116	108	114¾	90½	130,000	100	do 8% pfd.	$2Q	Apr. 1, 31	440	....	94½	88	89¾	— 3¼
49⅝	22⅝	28¼	4⅛	2,891,735	25	Richfield Oil (California)	....	Sept. 1, 30	5,300	3	3⅛	2¾	3	+ ⅛
42½	15	25¾	5	1,235,270	N.P.	Rio Grande Oil Co.	....	July 25, 30	1,500	6⅞	7	6¾	7	+ ⅛
64	43⅛	56½	37⅜	951,310	$13.40	Royal Dutch (N. Y. shares)	$1.3404	Jan. 31, 31	11,800	37⅛	38⅛	35⅝	36	— 1⅜
55¾	43⅜	48¾	26	77,492	£2	Shell Trans. & Trading.	96.6c	Jan. 23, 31	....	....	....	....	....	.....
31¾	19	25½	5⅞	13,069,076	N.P.	Shell Union Oil Corp.	....	June 30, 30	17,000	7½	7½	6½	6¾	— ¾
..	..	106¼	62	400,000	100	do pfd.	$1.37½Q	Apr. 1, 31	900	50	50	48½	48½	— 6½
40⅛	15	37	5⅜	869,255	10	Simms Petroleum Co.	....	Sept. 15, 30	900	7	7½	7	7	0
45	21	32	9¾	5,455,665	N.P.	Sinclair Consolidated Oil Corp.	25cQ	Jan. 15, 31	27,100	11¾	12	11¼	11⅝	— ⅛
111	103	112¾	86	154,685	100	do pfd.	$2Q	Feb. 14, 31	100	102½	102½	102½	102½	0
46½	42	42	10⅛	1,097,650	$25	Skelly Oil Co.	50cQ	Dec. 15, 30	4,800	8¾	8⅞	7⅝	8⅞	+ ⅛
..	..	99¾	43	120,000	100	do pfd.	$1.50Q	Feb. 1, 31	100	40½	40½	40½	40½	— 1
..	..	106	98	750,000	100	S. O. Export Corp. pfd.	$2.50S.A.	Dec. 31, 30	800	103½	104¾	103½	104¾	+ 1¼
81⅜	51½	75	42¼	13,016,434	N.P.	S. O. California.	62½cQ	Mar. 16, 31	28,600	43⅞	43⅞	42¼	43⅛	— ⅝
..	..	49	14⅜	320,000	$25	S. O. Kansas.	25cQ	Mar. 16, 31	500	15	15	14¾	14⅞	— ½
83	48	84⅞	43½	25,443,643	25	S. O. New Jersey.	‡25cQ	Mar. 16, 31	111,600	43⅜	43½	41⅜	41⅞	— 1⅝
48⅛	31¾	40⅜	19¾	17,809,530	25	S. O. New York.	40cQ	Mar. 16, 31	32,900	21⅝	21⅞	21	21¼	— ⅜
86⅜	55	70	39	1,416,911	N.P.	Sun Oil Co.	25cQ	Mar. 16, 31	700	41	41	39⅞	39⅞	— 1⅛
105½	100	107¾	97¾	100,000	$100	do pfd.	$1.50Q	Mar. 2, 31	250	....	103⅞	102½	103	— ⅞
24	5¼	9⅜	¾	1,026,979	N.P.	Superior Oil Corp.	....	.....	1,300	1¼	1¼	1	1	— ¼
71⅞	50	60½	28¾	9,850,724	$25	The Texas Corp.	75cQ	Apr. 1, 31	29,400	27¾	28¾	27½	28⅛	+ ⅜
23⅞	9½	14½	4	929,947	10	Texas Pacific Coal & Oil.	....	Dec. 31, 29	2,500	4⅝	4¾	4½	4½	— ¼
23½	10	17¾	5⅞	5,881,980	N.P.	Tide Water Associated Oil.	30cS.A.	Feb. 16, 31	5,300	6¾	6⅞	6½	6⅞	0
90⅞	74⅜	89¾	56	732,550	$100	do pfd.	$1.50Q	Jan. 2, 31	400	59	59	59	59	— 1
40	14	31	13	2,191,820	N.P.	Tide Water Oil Co.	20cQ	Dec. 31, 30	....	....	....	....	....	.....
97½	85¾	94⅞	71	199,443	$100	do pfd.	$1.25Q	Feb. 16, 31	400	70	70	68¼	68¼	— 2
..	..	24	12⅜	3,339,150	N.P.	Transcontinental Oil.	....	May 1, 30	....	....	....	....	....	.....
57	42⅜	50	20⅛	2,201,008	$25	Union Oil Co. (California).	50cQ	Feb. 10, 31	12,700	21½	21⅝	20⅝	21	— ⅝
..	..	38½	23	1,254,048	N.P.	Union Tank Car Co.	40cQ	Mar. 2, 31	1,400	22	22	20	21½	— ½
42⅞	15	27	4½	777,603	N.P.	Warner Quinlan Co.	....	July 3, 30	300	4⅝	4⅝	4½	4⅜	— ⅛
38	25	29½	26	490,000	N.P.	White Eagle Oil & Refg.	....	Apr. 20, 30	....	....	....	....	....	.....
29¾	12⅞	21	6½	428,967	N.P.	Wilcox Oil & Gas Co.	....	May 10, 28	2,800	8	8¼	7	7⅛	— 1½

*New high †New low ‡Also extra s-Stock §From close of preceding week. Total sales 625,042

Pittsburgh Stock Exchange

Transactions Week Ended April 2, 1931

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas....	20	5	5	5	— ⅝
Devonian Oil....	65	6½	5¾	6½	+1
Leonard Oil & Dev.	200	1⅛	1	1⅛	....
Lone Star Gas....	10,493	21¾	20	20¼	—1½
do pfd.....	70	108	107	107	—1
Phoenix Oil.....	3,500	.15	†.10	.15	—c.05
Plymouth Oil....	1,260	12	12	12	0
Shamrock O & G.	450	9½	8	8	—2
West. Pub. Ser...	7,314	12½	10	10⅜	—2⅜

†New low.

White Oak Opens New York Office

NEW YORK—The White Oak Corp., with headquarters in Tulsa, has opened a New York office at 15 Moore St., under the management of Roger Moran, with A. J. Doremus as eastern sales manager. This office will handle sales of the company's gasoline, naphtha, fuel and bunker oil and steam refined stocks, both for domestic use and for export shipment from the gulf. The company also maintains fuel oil bunker stations at principal gulf ports.

Mr. Doremus is well known in eastern marketing circles, having operated for some years as the General Oil Co., of New York.

TORONTO—Motorists in the province of Ontario will pay $11,000,000 in gasoline taxes for the fiscal year ended Oct. 31, 1931, E. A. Dunlop, provincial treasurer, estimated recently. This will be a gain of $250,000 in the same period in 1930. Gasoline tax has been 5 cents in Ontario since March 28, 1929.

WASHINGTON, D. C.—A national fuel for Argentina composed of 90 per cent gasoline and 10 per cent pure alcohol, has been proposed by the Argentine National Chemical Office. The alcohol is to be obtained from agricultural products, such as linseed and corn oils, the report says.

Aviation Gasoline Prices

(Continued from Page 117)

S. O. LOUISIANA

	T.W.	Tax	Total T.W.
New Orleans, La.	18	6	24
Nashville, Tenn.	20	5	25
Memphis, Tenn.	19	5	24

2c per gal discount off above posted retail t.w. prices to dealers and commercial consumers.

S. O. NEBRASKA

Omaha	16.25	4	20.25

2c per gal. refund to reseller.

CONTINENTAL OIL CO.

Denver, Colo.	14	4	18
Cheyenne, Wyo.	17	4	21
Helena, Mont.	18	5	23
Salt Lake City, Utah	†18.5	3.5	22
Albuquerque, N. M.	15	5	20
Boise, Ida	*20.5	5	25.5

†Less 4c on aviation gasoline at time of delivery.
*Less 2.5c on aviation gasoline at time of delivery.

S. O. CALIFORNIA

Phoenix, Ariz.	17.5	4	21.5
Los Angeles, Cal.	16.5	3	19.5
San Francisco, Cal.	17	3	20
Reno, Nev.	21	4	25
Portland, Ore.	17.5	4	21.5
Seattle, Wash.	17.5	3	20.5
Spokane, Wash.	21.5	3	24.5

Note: 4c per gallon added to t.w. price, in S. O. California territory, to customers taking delivery direct into the fuel tank of planes.

N. P. N. Service Record

Some of the requests for information, data and advice, which were taken care of in various National Petroleum News offices in the past week are:

Manager of New York association of tradesmen told how to arrive at gasoline and motor oil consumption in the localities he mentions.

* * *

President of Quebec oil marketing company furnished names and addresses of Pennsylvania bright stock makers, and referred to Pennsylvania Grade Crude Oil Association at Oil City, Pa., for complete list of refiners of Pennsylvania grade crude.

* * *

Chief chemist of Louisiana refiner given names of the 17 oil companies who hold patent rights in the Hydro Patents Co., organized for the development of the hydrogenation process.

* * *

Michigan inquirer told of the purchase of the Wayco Oil Corp. by the Paragon Refining Co. and of the latter by the Gulf Refining Co.; also of the organization of a new Paragon Refining Co. of Ohio.

* * *

Arizona gasoline and oil distributor furnished names and addresses of refiners of Pennsylvania motor oil; also N.P.N. article telling of importance of S. A. E. viscosity numbers for motor oil and furnished new S. A. E. specifications.

* * *

Oregon representative of Pennsylvania refiner referred to N.P.N. articles telling of the merger of one large Pennsylvania refiner and producer, and one Mid-Continent refiner and producer.

* * *

Washington oil jobber furnished names and addresses of Pennsylvania refiners of bright stock and refiners of Mid-Continent stock who have their own terminals on the Gulf Coast or who can arrange to ship by boat from the Gulf.

* * *

Other inquiries answered the past week as to where various types of oil marketing equipment may be purchased include:

Dry-cleaning machine described on page 32-B, March 11 issue, Washington, D. C. service station proprietor and Illinois inquirer told where it may be purchased;

Meters for gasoline pumps, Illinois lumber company given names of nine manufacturers;

Compounding kettles, Tennessee oil compounder given four companies' names making them;

Rebuilt and used gasoline pumps, Wisconsin tire dealer given three company names; also names and addresses of 22 companies manufacturing gasoline pumps;

Coupon books, Nebraska oil marketer told where he can buy;

Dye for coloring gasoline, New York inquirer told where he can obtain;

Colorado motor car dealer given names and addresses of tire manufacturers who sell their tires through gasoline stations.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

REFINERY SUPERINTENDENT — Twenty years operation and construction, of lubricating, skimming, asphalt, cracking plants. Desires new connection. Will accept foreign service. Address Box 674.

SALES EXECUTIVE desires permanent connection with opportunity for advancement with refiner or distributor. Twenty years experience in refining, lubricating engineering and sales management. Aggressive. Always produced results. Eastern location preferred. Address Box 683.

NEW CONNECTION WANTED by man under 40. Ten years experience in oil business. Part of this time was spent as general manager of a chain of bulk plants and filling stations. During past two years have had full charge of an oil company doing more than two million dollar business. Desire to connect with a jobbing company on basis of percentage of profits earned. Address Box 690.

DISTRICT MANAGER—Ten years experience with major company in handling of sales and operation of chain service stations and bulk plants. Available after April 15th. Territory immaterial. Connection must have future. Address Box 692.

Situations Open

CHEMIST

for Eastern refinery, preferably graduate chemical engineer with three or four years experience in gasoline and lubricating oil work. Applicants should give full particulars, including present salary.

Address Box 691

COMMISSION SALESMAN for oil equipment wanted to cover territory in Illinois, Kentucky and Michigan. Address Box 693.

RESEARCH LABORATORY MAN WANTED

who is experienced in true boiling point and flash vaporization determinations and treating work.

Struthers-Wells Co., Warren, Pa.

CHEMIST WANTED

familiar with manufacture and testing of asphalts and road oils; location, Oklahoma; state experience, references, salary.

Apply to Box 1868,
Fort Worth, Texas

OIL SALESMEN WANTED

Experienced lubricating oil salesmen, one each in States of Kentucky, Tennessee, Mississippi, Alabama, Georgia, Texas and Canadian Provinces to represent a refiner of paraffin base motor and tractor oils. Furnish own car and bond. Expenses and liberal commission. Men of excellent character and best of references will be considered for these positions.

Address Box 694

Wanted to Buy

USED STORAGE TANKS WANTED. What have you with prices? Power Penn Oil Works, Pulaski, Iowa.

For Sale

BULK PLANT FOR SALE 50,000 gallon capacity, one five-pump filling station, one three-pump station, two trucks and considerable equipment in good Iowa county seat town. Annual sales $85,000. Owner must sell on account of ill health. Address Box 688.

JOBBING BUSINESS FOR SALE

in Eastern Iowa, junction of two U. S. Highways. Filling station and bulk plant, 65,000 gallon capacity. Good location. Plenty room for eat house and cabins.

Address Box 689

Business Opportunities

A NATIONAL SALES ORGANIZATION resources of one million dollars, established 25 years, having oil field supply offices and warehouses in Kansas City and Tulsa, wants additional lines of unquestionable merit, and of large volume, for distribution to oil producers and industrial plants in Kansas, Oklahoma and Texas. Dun credit rating A+A1.

Address Box 675

WHERE JOBBER AND REFINER MEET

My office is nothing more than a clearing house for Seller and Buyer of Petroleum Products

DALE W. MOORE

405 Philtower Bldg., Tulsa, Okla.
Telephones: 3-4177 and 3-4178.
L. D. 136

Miscellaneous

WHAT IT COSTS

"For Sale," "Wanted to Buy," "Help Wanted," "Business Opportunities."

"Miscellaneous" classifications, set in type this size without border—10 cents a word. Minimum charge, $3.00.

"Position Wanted"—5 cents a word. Minimum charge $1.00.

Advertisements set in special type or with border—$4.00 per column inch.

Copy must reach us not later than Friday preceding date of issue.

All advertisements carried on this page are payable in advance.

Standard Oil Stocks on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Outstanding Shares	Par Value	Companies	Div. Rate	Last Paid	Transactions Week Ended April 4 Sales	First	High	Low	Last	Change§
18¾	13½	18½	12¼	.....	£1	Anglo-Amer. Oil voting stk. ctfs..	.....	June 5, 29	.....	....	....	....	....	.....
17⅛	11	19	12	.....	£1	do non-voting stk. ctfs.....	.....	June 5, 29	.....	....	....	....	....	.....
2½	⅜	1	⅜	500,000	N.P.	Atlantic Lobos Oil.....	.....	.....	100	¾	¾	¾	¾	0
4⅛	1	1½	⅛	200,000	$50	do pfd.....	.....	.....	2,900	2¼	3¼	3¼	3¼	+ 1¼
46½	25	25	11¼	40,000	25	Borne Scrymser Co.....	$1S.A.	Oct. 15, 30	.....	....	....	....	....	.....
74¼	55	69	39⅛	200,000	50	Buckeye Pipe Line Co.....	$1Q	Mar. 14, 31	400	50⅜	50⅜	49⅞	49⅞	— 1⅛
210	130	184⅞	100¼	120,000	25	Chesebrough Mfg. Co.....	‡$1Q	Mar. 31, 31	300	120	120	115½	119½	+ 3⅜
11⅜	5⅜	7⅜	3	.....	N.P.	Creole Petroleum Co.....	.....	.....	3,900	3	3⅛	2¾	2¾	— 1/4
75¾	40	65¾	20¼	30,000	$50	Cumberland Pipe Line Co.....	50cQ	Mar. 16, 31	.....	....	....	....	....	.....
70½	42	54¾	26	50,000	100	Eureka Pipe Line Co.....	$1Q	Feb. 2, 31	100	27½	27½	27½	27½	0
...	...	6¾	2½	280,000	N.P.	Galena Oil Corp. w.i.....	.....	.....	.....	....	....	....	....	.....
...	...	37¼	23⅞	.....	N.P.	General Petroleum Corp. w.i.....	.....	.....	600	21¾	21¾	21¾	21¾	0
128	74⅛	119	57¼	2,974,645	$25	Humble Oil & Refg. Co.....	‡50cQ	Jan. 1, 31	4,600	55¼	55¾	54¾	54⅞	— 1/4
41	22	30	15	26,490,741	N.P.	Imperial Oil, Ltd.....	12½cQ	Mar. 2, 31	6,700	14⅞	15¼	14⅝	14⅞	— 1/2
42⅛	26	41	14½	300,000	$10	Indiana Pipe Line Co.....	50cQ	Feb. 14, 31	500	17⅛	17⅞	16⅛	16⅛	0
29⅛	15	24	11⅜	14,247,880	N.P.	International Petroleum Co.....	25c	Dec. 15, 30	20,500	12	12	11⅜	12	0
25⅞	10½	22⅜	11½	509,000	$12½	National Transit Co.....	25cQ	Mar. 16, 31	1,300	16½	16½	14½	14½	— 2½
17¾	10	21	10½	100,000	10	New York Transit Co.....	40cQ	Jan. 15, 31	200	10⅜	10⅜	10¼	10¼	— 1/8
63	41	54	26¼	40.000	50	Northern Pipe Line Co.....	$2S.A.	Jan. 2, 31	350	30	30	29	30	+ 3/4
105½	103¾	108	100⅜	600,000	100	Ohio Oil pfd.....	$1.50Q	Mar. 14, 31	300	99¾	99¾	99⅛	99¾	— 1/4
44½	18⅜	32	12	400,000	25	Penn Mex. Fuel Co.....	$1	Dec. 15, 30	.....	....	....	....	....	.....
50	29	33	4⅞	160,000	25	Solar Refining Co.....	...	Dec. 20, 29	200	7	7	6⅛	6⅛	— 1⅞
23½	13	20⅛	6¾	100,000	10	Southern Pipe Line Co.....	50c	Mar. 12, 31	100	14⅛	14⅛	14⅛	14⅛	+ 1/2
60¼	35⅛	45⅞	18	1,200,000	25	South Penn Oil Co.....	25cQ	Mar. 31, 31	1,500	18¼	18⅜	17¾	18	— 1/2
70	45	64	32	35,000	50	Southwest Pa. Pipe Lines.....	$1Q	Apr. 1, 31	100	33	33½	33	33½	— 1/2
63	45	59⅞	30	16,850,587	25	S. O. Indiana.....	50cQ	Mar. 16, 31	17,900	31	31¼	30⅝	31¼	+ 3/8
46⅞	29	40½	18⅞	2,577,124	10	S. O. Kentucky.....	40cQ	Mar. 31, 31	10,800	21⅛	21⅞	19⅞	20⅜	— 1⅛
50¼	40	48⅞	34	188,159	25	S. O. Nebraska.....	50cQ	Mar. 20, 31	200	29¼	29¼	29	29	— 3/4
129	60	108½	43¼	560,000	25	S. O. Ohio.....	62½cQ	Apr. 1, 31	800	49¾	49¾	49	49	— 3/4
				120,000	100	do 5% pfd.....	$1.25Q	Jan. 15, 31	40	105	105	105	105	+ 3/4
124½	113½	122	115¼	70,000	100	do 7% pfd.....	$1.75Q	Dec. 1, 30	.....	....	....	....	....	.....
18	5⅛	10	4	34,158	25	Swan Finch Oil Corp.....	....	Jan. 15, 29	.....	....	....	....	....	.....
133¾	75½	97⅞	45⅜	5,139,887	25	Vacuum Oil Co.....	$1Q	Mar. 20, 31	7,400	54⅜	54⅝	53⅛	53½	— 1⅛

*New high †New low ‡Also extra §From close of preceding week.

Independent Oils on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Par Value	Companies	Transactions Week Ended April 4 Sales	First	High	Low	Last	Change§
.72	⅛	⅜	1/16	$1	Amer. Contr. Oilfields	.....	....	....	....	....	.....
8⅝	1⅛	4½	½	5	Amer. Maracaibo.....	4,700	1½	1½	1¼	1¼	— 1/4
4¾	1	1⅜	1⅛	10	Argo Oil.....	.....	....	....	....	....	.....
26	3¾	16¾	4⅜	N.P.	Arkansas Nat. Gas...	4,100	5½	5⅝	5	5⅜	+ 1/4
24¾	6½	16⅝	4¾	N.P.	do Class A.....	10,800	5⅜	5¾	5½	5⅜	0
9	4	8⅛	6¼	10	do pfd.....	100	6¾	6¾	6¾	6¾	— 1/8
70	50	28½	13½	N.P.	British American Oil..	.....	....	....	....	....	.....
4⅞	⅛	2¾	⅜	¼	Carib Syndicate.....	4,200	1½	1½	1⅜	1½	+ 1/8
68½	20	44¼	13⅛	N.P.	Cities Service.....	100,900	17⅞	18⅞	17¾	18⅛	+ 3/8
99¼	84	93⅞	52	100	do pfd.....	1,100	83⅝	83⅞	83½	83⅞	+ 1/4
9¼	8	9	7¼	10	do pref. B.....	100	6¾	6¾	6¾	6¾	0
96	81	89⅞	80	100	do pref. BB.....	.....	....	....	....	....	.....
1⅛	¼	1/16	⅛	1	Colombia Syndicate..	12,900	1/16	⅜	¼	1/16	— 1/16
15	3⅞	8¼	1⅛	N.P.	Colon Oil Corp.....	800	2½	2½	2½	2½	0
..	..	21	3⅜	N.P.	Columbia Oil & Gas..	2,200	4⅞	5	4⅝	4⅝	— 3/8
11⅜	2½	5⅞	2	10	Consolidated Royalty	100	1⅞	1⅞	1⅞	1⅞	— 1/8
135	42	74¾	1⅜	N.P.	Cosden Oil Co.....	700	2	2	2	2	0
87	55	70	10¼	100	do pfd.....	.....	....	....	....	....	.....
2½	¼	1	¼	N.P.	Crown Central Pet...	200	½	½	⅜	⅜	0
11½	4	..	..	N.P.	Crystal Oil.....	.....	....	....	....	....	.....
51⅜	51⅛	..	..	100	do pfd.....	.....	....	....	....	....	.....
26	6¾	13½	4⅛	N.P.	Darby Petroleum.....	100	3½	3½	3½	3½	— 1/8
..	..	21¾	21½	N.P.	do new.....	.....	....	....	....	....	.....
11	2	11	2	N.P.	Derby Oil & Refg.....	1,400	3⅞	4	3½	4	— 1/4
44	17	60	30	N.P.	do pfd.....	.....	....	....	....	....	.....
..	..	12	12	10	Devonian Oil.....	.....	....	....	....	....	.....
209	115	166⅞	58½	$25	Gulf Oil Corp.....	6,400	65⅛	65¼	61	63	— 2
7½	1⅜	4	2¼	N.P.	Homaokla Oil.....	.....	....	....	....	....	.....
..	..	47½	12¾	N.P.	Indian Territory A...	100	16	16	16	16	— 1/8
..	..	53½	12⅝	N.P.	do B.....	100	15¾	15¾	15¾	15¾	— 1/2
2⅞	⅜	1¾	⅜	10	Intercontinental Pet..	12,800	1/16	⅝	½	1/16	— 1/16
3⅝	1¼	3	⅞	N.P.	Kirby Petroleum.....	.....	....	....	....	....	.....
6⅛	1	4¾	½	N.P.	Leonard Oil & Dev...	2,400	1	1	1	1	0
38⅞	18	29	5	N.P.	Lion Oil Refg.....	100	5¾	5¾	5¾	5¾	— 1/8
67⅞	28	55⅞	19⅜	N.P.	Lone Star Gas.....	5,600	21⅜	21⅜	19⅞	20	— 1½
..	..	31	5½	$25	MacMillan Petrol.....	.....	....	....	....	....	.....
2⅞	¼	½	⅛	1	Magdalena Synd.....	1,100	1/16	1/16	1/16	1/16	0
38½	14	16	3	N.P.	Margay Oil.....	.....	....	....	....	....	.....
6⅜	2¼	7½	1⅜	N.P.	Mexico Ohio Oil.....	.....	....	....	....	....	.....
..	..	11⅞	2¼	N.P.	Middle States A v.t.c.	200	3⅜	3⅜	3¼	3¼	0
..	..	6	¾	N.P.	do Class B v.t.c.	300	1	1	1	1	— 1/8
42	8	36¼	5	5	Missouri-Kansas P.L.	6,500	8⅛	8¼	7⅜	7⅝	— 1/2
1½	¼	¾	⅜	1	Mountain & Gulf Oil..	2,000	⅜	½	⅜	½	+ 1/4
22⅞	7	12⅛	4½	10	Mountain Producers..	800	4½	4½	4⅜	4½	0
43⅞	24	41⅜	19⅞	N.P.	Nat. Fuel Gas.....	1,700	23	23	22⅝	23	0
5	2¼	3½	1⅛	$5	New Bradford Oil....	4,700	1¼	1½	1¼	1⅜	+ 1/8
4¾	3⅛	3½	2⅜	10	New England Fuel...	.....	....	....	....	....	.....
24½	11⅞	16⅞	4	25	N. Y. Pet. Royalty...	.....	....	....	....	....	.....
18½	6⅛	11¼	2⅛	N.P.	North Central Texas	.....	....	....	....	....	.....
19¼	8⅛	11⅝	3⅞	N.P.	Oilstocks Ltd. A.....	700	3⅛	3⅜	3	3	— 1/2
18¼	8½	11½	4⅝	N.P.	do B.....	.....	....	....	....	....	.....
26⅜	12⅛	19½	6½	N.P.	Pacific Western Oil...	700	9½	9½	8¾	8¾	— 3/4
3½	½	2½	¼	N.P.	Pandem Oil.....	5,600	1/16	⅜	¼	1/16	— 1/16
10½	2¼	4⅜	1	N.P.	Pantepec Oil.....	.....	....	....	....	....	.....
25½	13⅛	15	13⅛	$25	Paragon Refg. B. ctfs.	.....	....	....	....	....	.....
28	17	29	19⅛	N.P.	Petroleum Corp.....	.....	....	....	....	....	.....
..	..	5⅞	½	..	do warrants.....	500	¾	¾	¾	¾	0
37	22	27½	16¼	N.P.	Plymouth Oil.....	1,700	12	12	11⅞	12	0
16	9	10½	3	$5	Red Bank Oil.....	.....	....	....	....	....	.....
8⅛	1⅛	5⅜	1	N.P.	Reiter-Foster Oil.....	300	1⅛	1⅛	1⅛	1⅛	— 1/8
25¼	19	23½	7	25	Richfield Oil pfd.....	1,400	5	5	3⅞	3⅞	— 1⅜
29	13	25	2¼	N.P.	Root Refining pr. pfd.	.....	....	....	....	....	.....
11	3	8⅜	2	N.P.	Ryan Consolidated...	100	2¼	2¼	2¼	2¼	+ 1/4
5⅞	1⅛	2½	½	10	Salt Creek Consol....	.....	....	....	....	....	.....
25⅞	9	15¼	5¼	10	Salt Creek Producers.	1,900	6¼	6⅜	6⅛	6⅜	+ 1/8
33⅛	10	8	1¾	25	Shreveport El Dorado	.....	....	....	....	....	.....
..	..	39⅛	39	25	Signal Oil & Gas A...	.....	....	....	....	....	.....
24	9	17	6	N.P.	Southland Royalty...	2,100	5⅛	5⅛	4½	4½	— 5/8
12	4	10	2	5	Sunray Oil.....	3,400	3⅞	3⅞	3½	3⅞	0
23	7⅛	19½	8	N.P.	Texon Oil & Land....	.....	....	....	....	....	.....
81⅛	8⅞	16	8	10	Venezuela Mexico....	.....	....	....	....	....	.....
6½	1⅛	4½	¾	5	Venezuela Petroleum.	1,800	1	1⅛	1	1	0
9⅛	2	5	2	1	Woodley Petroleum...	200	2⅞	3	2⅞	3	— ½
5⅜	¼	2½	⅜	N.P.	Y Oil & Gas.....	.....	....	....	....	....	.....

*New High †New Low §From close of preceding week.

New York Bonds

Week Ended April 3

	High	Low	Last	Change§
Asso. Oil gold 6s.....	103¼	103¼	103¼	0
Atlantic Refg. deb. 5s...	103	102½	102⅞	0
Cal. Pet. 5s.....	94¾	94¾	94¾	— 1/4
General Pet. 5s.....	103	102½	103	+ 1/2
Humble Oil & Refg. 5s..	102½	102	102¼	+ 1/4
Humble Oil & Refg. 5½s	102⅜	102¼	102¼	— 1/4
Pan Amer. P & T 6s....	102¼	101¾	102¼	+ 1/4
Pan Amer. P & T 6s....	64	63⅝	64	0
Phillips Pet. 5½s.....	75½	70½	75	0
Pure Oil 5½s.....	90½	89½	90½	+ 1/2
Pure Oil 5½s.....	86¾	85½	86	—1
Richfield Oil of Calif. 6s.	57¾	55¼	55¼	—2 7/8
Shell Union Oil 5s.....	73⅞	72¼	72¼	— 3/4
Shell Union Oil 5s with war.	76¼	74⅜	74¾	— 1/2
Sinclair Con. Oil 7s.....	98½	98⅜	98¼	0
Sinclair Con. Oil 6½s...	95	94⅝	94⅝	0
Sinclair Con. Crude 5½s	102⅛	101¾	102	+ 1/8
Sinclair Pipeline 5s.....	100	99½	99½	— 1/4
Skelly Oil 5½s.....	75¾	72⅜	72½	—4 1/4
S. O. N. J. 5s.....	103½	103	103	0
S. O. N. J. 4½s.....	99	98⅛	98¼	— 3/4
Union Oil of Calif. 6s A..	106⅛	106	106	0
Union Oil of Calif. 5s C..	100½	100⅜	100½	0
Union Oil of Calif. 5s war.	95⅛	94½	95	0
Warner-Quinlan 6s.....	55	53¾	53¾	— 3/4
White Eagle Oil 5½s war.	102½	102½	102½	0

New York Curb Bonds

Week Ended April 3

	High	Low	Last	Change§
Beacon Oil 6s '36.....	99¾	98½	98½	0
Cities Serv. 5s '66.....	73¾	73¼	73½	— 1/4
Cities Serv. 5s '50.....	79⅜	78	78⅞	— 3/4
Cities Serv. G. 5½s '42..	77½	77¼	77¼	— 1/2
Cities Serv. G. P. 6s '43..	86¼	86	85¾	— 3/4
Cont. Oil 5½s '37.....	93¼	93	93⅛	0
Empire O & R 5½s '42..	75	74	74⅝	— 3/8
Gulf Oil 5s '37.....	102⅜	102	102¼	— 1/4
Gulf Oil 5s '47.....	102⅜	101¾	102	0
Indep. Oil 6s '39.....	80	79⅞	79⅞	—9 1/8
Sun Oil 5½s '39.....	102	101¾	101⅞	— 1/8

Belgium, the United States and Italy were the three largest suppliers of paraffin wax to French Morocco the first half of 1930. Belgium shipped 281,400 barrels; United States, 208,160 barrels; and Italy 145,180 barrels.

Nearly 800,000 barrels of lubricating oil were exported by this country to France during the first half of 1930. The next largest shipper, Russia, exported 115,000 barrels.